

AD-A066 384

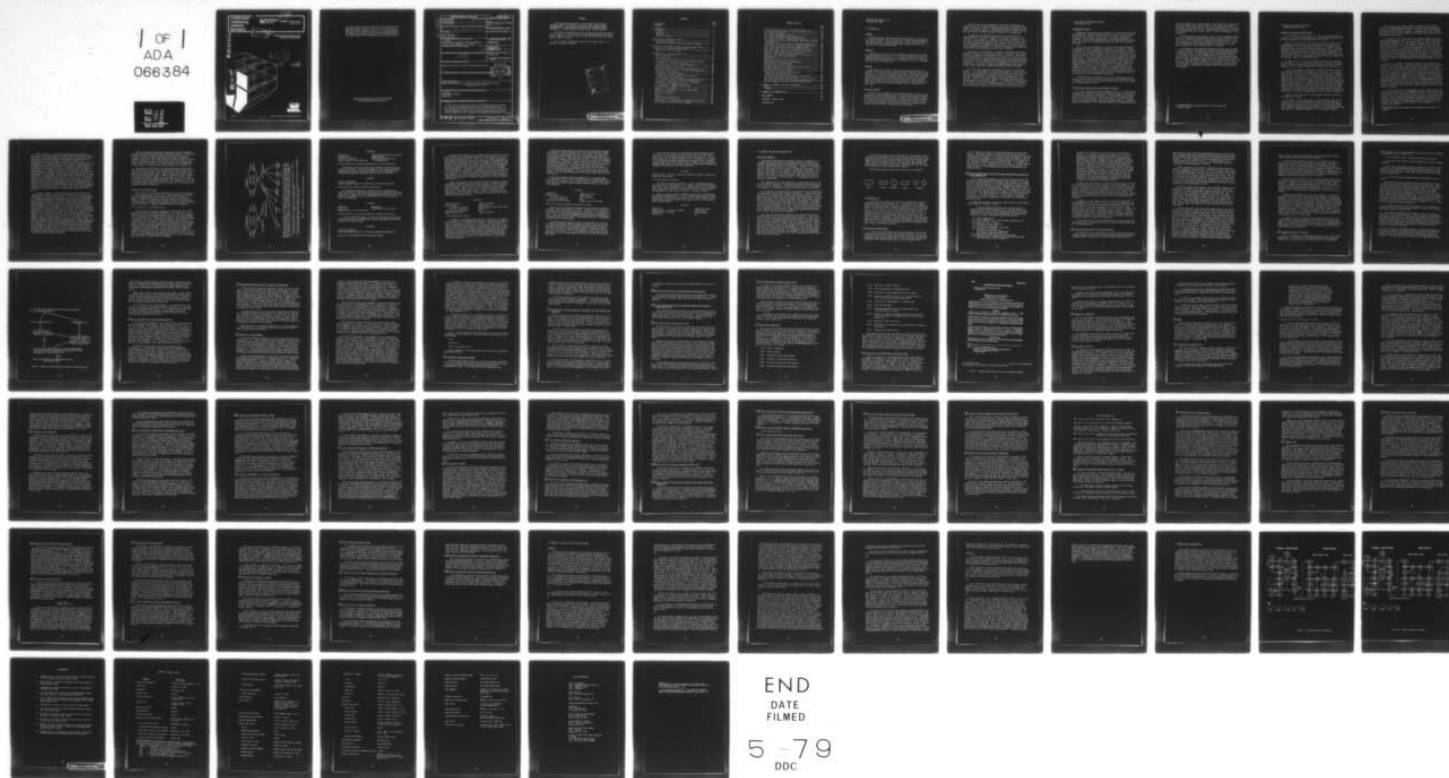
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAI--ETC F/G 15/5
CONSTRUCTION CONTRACT TYPE SELECTION PROCEDURES.(U)
FEB 79 L B BENSON, G E COLWELL

UNCLASSIFIED

CERL-TR-P-98

NL

1 OF 1
ADA
066384



END
DATE
FILMED

5-79
DDC

construction
engineering
research
laboratory



United States Army
Corps of Engineers
...Serving the Army
...Serving the Nation

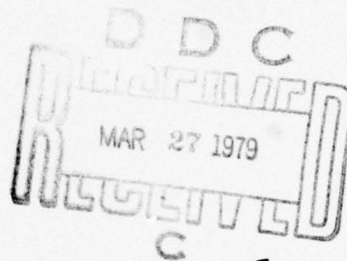
12
B.S.
TECHNICAL REPORT P-98
February 1979

LEVEL

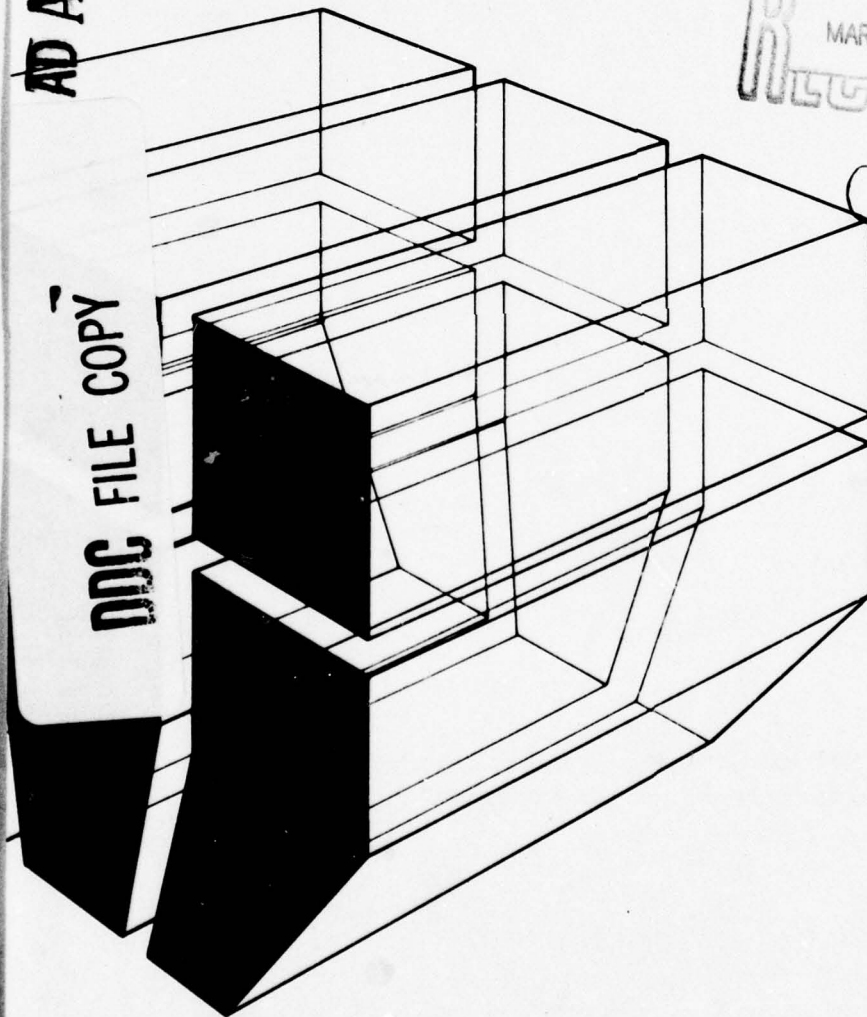
CONSTRUCTION CONTRACT TYPE
SELECTION PROCEDURES

AD A066384

DDC FILE COPY



by
L. B. Benson
G. E. Colwell



79 03 26 022

Approved for public release; distribution unlimited.

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official indorsement or approval of the use of such commercial products. The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

**DESTROY THIS REPORT WHEN IT IS NO LONGER NEEDED
DO NOT RETURN IT TO THE ORIGINATOR**

REPORT DOCUMENTATION PAGE		INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CERL-TR-P-98	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER 9
4. TITLE (and Subtitle) CONSTRUCTION CONTRACT TYPE SELECTION PROCEDURES.	5. TYPE OF REPORT & PERIOD COVERED FINAL rept.	
7. AUTHOR(s) Lee B./Benson Glenn E./Colwell	6. PERFORMING ORG. REPORT NUMBER	
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. ARMY CONSTRUCTION ENGINEERING RESEARCH LABORATORY P.O. Box 4005, Champaign, IL 61820	8. CONTRACT OR GRANT NUMBER(s)	
11. CONTROLLING OFFICE NAME AND ADDRESS	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 4K0728012A40K1	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) 1275p.	12. REPORT DATE February 1979	
	13. NUMBER OF PAGES 74	
	15. SECURITY CLASS. (of this report) Unclassified	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) DDC RECEIVED MAR 27 1979 REGULATED C		
18. SUPPLEMENTARY NOTES Copies are obtainable from National Technical Information Service Springfield, VA 22151		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) contracts procurement strategy negotiation		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report presents the results of research to produce guidance for contract type selection for construction procurement actions. A flow diagram and coordinated text are used to explain the various contracting methods available, describe the situations where each method could be appropriate, and indicate the advantages/disadvantages of each.		

FOREWORD

This research was conducted for the Directorate of Military Programs, Office of the Chief of Engineers (OCE), under Project 4K0728012A40K1, "Improved Military Construction Management (MCCM) Procedures." The OCE Technical Monitor was Mr. Frank W. Parker.

The work was performed by the Facility Systems Division (Mr. Edward A. Lotz, Chief), U.S. Army Construction Engineering Research Laboratory (CERL), Champaign, Illinois. The Principal Investigator for this study was Mr. Glenn E. Colwell.

COL J. E. Hays is Commander and Director of CERL, and Dr. L. R. Shaffer is Technical Director.

ACCESSION for	
NTIS	White Section <input checked="checked" type="checkbox"/>
DOC	Buff Section <input type="checkbox"/>
UNANNOUNCED	
JUSTIFICATION	
BY	
DISTRIBUTION/AVAILABILITY STATEMENTS	
Dist.	
A	

CONTENTS

DD FORM 1473	Page
FOREWORD	1
	3
1 INTRODUCTION.....	7
Problem.....	7
Objective.....	7
Approach.....	7
Use of This Report.....	7
2 SELECTION OF PROCUREMENT STRATEGY.....	9
Procurement Strategy.....	9
Contract Type Selection Within Procurement Strategy.....	9
3 DEFINITION OF CONTRACT-RELATED TERMS AND CONTRACT TYPES.....	11
Definition of Contract-Related Terms.....	11
Description of Contract Types.....	14
4 FLOWCHART FOR SELECTING CONTRACT TYPE.....	20
Use of the Flowchart.....	20
Initial Decision.....	21
Plans and Specifications.....	21
Are Performance Specifications (Purchase Descriptions)	
Suitable for Formal Advertising?.....	22
Time and Suitability for Two-Step Procedures.....	23
Time/Value Analysis of Situation.....	25
Quality and Realism of Plans and Specifications.....	28
Could/Should Any Portions of the Contract Be Separated?.....	29
Evaluation of Contingencies.....	29
Are Economic Adjustments Needed?.....	31
Is There Both Time and Competition Available for	
Formal Advertising Procedures?.....	32
Firm Fixed-Price Contract Awarded by Formal Advertising.....	33
Firm Fixed-Price Contract With Economic Adjustments	
Awarded by Formal Advertising.....	33
Will Adjustment or Deletion Cure This?.....	33
Will Adjustment or Deletion Correct This?.....	34
Reasons for Negotiation.....	34
Preparation of Determinations and Findings (DAF).....	35
Authority to Negotiate.....	37
Re-Examine Situation.....	37
Wait.....	38
Preparation for Negotiation.....	38
Evaluation of Contingencies.....	41
Can the Reason for Unacceptable Contingencies Be Cured?.....	42
Re-Evaluate Contingencies Within a Range.....	43

CONTENTS (cont'd)

	<u>Page</u>
Evaluate Contingencies for First Portion Only.....	43
Is It Possible to Determine a Firm-Fixed Cost/Price?.....	44
Are Incentives Needed?.....	45
Are Economic Adjustments Required?.....	46
Will There Be Adequate Time and Competition?.....	46
Firm Fixed-Price Contract Awarded by Negotiation.....	47
Firm Fixed-Price Contract With Economic Adjustments, Awarded by Negotiation.....	47
Firm Fixed-Price Incentive Contract Awarded by Negotiation...	48
Fixed-Price, Successive Incentive, Awarded by Negotiation ...	48
Will an Award Fee Provide the Desired Motivation?.....	48
Can a Cost Target, Range, and Ceiling Be Established?.....	49
Establish Target, Range, and Ceiling for First Portion.....	50
Determine Incentives and Economic Adjustments.....	50
Incentives and Economic Adjustments for First Portion.....	51
Adjustments for Cost-Type Contracts.....	52
Examine Staff.....	53
Define Scope and Limits for Contract.....	54
Further Design or Research and Development.....	55
Can Target Costs Be Determined?.....	55
Determine Incentives and Awards.....	56
Is There Competition (or Sole Source Authorization)?.....	56
Are Goals Firm Enough to Proceed?.....	57
Alert Cost-Plus-Fixed-Fee Team.....	58
Preparation and Successful Negotiation of Cost-Plus-Fixed-Fee Contract.....	58
Cost-Plus-Fixed-Fee Contract, Awarded by Negotiation.....	58
Are Incentives or Awards Predominant?.....	58
Cost-Plus-Incentive-Fee Contract, Awarded by Negotiation.....	59
Cost Plus Award Fee Contract, Awarded by Negotiation.....	59
 5 EXAMPLES OF CONTRACT TYPE SELECTION PROCESS.....	 60
Example 1.....	60
Example 2.....	64
 6 SUMMARY AND RECOMMENDATIONS.....	 66
 BIBLIOGRAPHY	 69
 APPENDIX: Subject Index	 70
 DISTRIBUTION	

CONSTRUCTION CONTRACT TYPE SELECTION PROCEDURES

1 INTRODUCTION

Problem

Although several construction contracting methods are available to the Corps of Engineers, the full potential of these various methods is not always realized. Corps personnel need a means of becoming familiar with the applicable situations, advantages, disadvantages, and limitations of each contracting method.

Objective

The purpose of this study was to develop information on available contracting methods in order (1) to familiarize personnel with the advantages/disadvantages of each, (2) to provide guidance for selecting the best contracting method for the circumstances, and (3) to encourage more flexibility in contracting.

Approach

The construction contract selection process was organized into a flowchart depicting the various decision points leading to contract type selection. A narrative discussing the questions to be answered in decision-making, applicable procurement regulations, factors that influence the decisions, and resulting implications was prepared with paragraph numbers corresponding to decision blocks appearing in the flowchart. The draft flowchart and narrative were distributed to OCE and selected field installations for review and comments prior to preparation in final form.

Use of This Report

This report is intended to assist Corps personnel in selecting the proper type of construction contract; it does not deal with the specific functions of planning, engineering, or construction personnel, but with the final product that the cooperation of these three sections produces. It is written in the hope that a better perspective of the entire process will help personnel in each division to do their respective jobs better and also help their interaction with each other.

Chapter 2 defines the background of the contract type selection process and Chapter 3 defines contract-related terms and contract types. Chapter 4 takes the reader on a step-by-step narrative through the contract type selection process, illustrating each decision point along the way, and Chapter 5 contains examples of how to use the procedures.

The methods and procedures presented here do not constitute a unique method of arriving at contract type, nor do they constitute an ideal way for all situations. However, if followed in sequence, they will give a good indication of the best contract type for a wide variety of situations and, more important, will insure that the selection process is approached in a methodical objective way. The basic principle of the approach presented here is that each procurement action should be based on the facts surrounding that particular situation.

The material in this document is drawn from applicable regulations and other guidance for construction contracts. Quotes have been used as sparingly as possible and references as often as possible. Since most of the source material is available to the reader, this report was written principally as an organized presentation of existing regulations and references; these are listed in the bibliography and referenced throughout the text. In case of conflicts, the regulations obviously overrule comments here. The subject index (the appendix) enables the reader to quickly locate additional references pertaining to specific topics.

Since this report provides an overview of the entire contracting process, it will not address certain detailed questions, even with references. It is not intended, nor should it be used, as a substitute for the considered judgment of a person qualified in the particular field involved, whether legal, procurement, planning, engineering, or construction. The final result will depend on how well each person contributes expertise to the total effort. It is important to realize that this document is useful for hypothetical as well as actual situations and, as such, can be used in a wide variety of situations and at various times from project conception to final selection of contract type(s).

2. SELECTION OF PROCUREMENT STRATEGY AND CONTRACT TYPE

Procurement Strategy

Beginning at the point where the need for a product or facility has been determined, many decisions must be made that will affect the process by which this need is filled. Even in a large, structured organization like the Corps of Engineers, a wide range of methods is available. Some of these methods depend on circumstances which already exist and others will be determined by decisions made as the process goes along.

The initial decisions made as a result of some expressed need will be referred to here as "procurement strategy." For example, if those responsible for the procurement of a new building decide that a contract will be let to an architect/engineer (A/E) for design of the facility, and that after that another contract will be let to a contractor to construct it, and that the contractor's effort will be monitored by a Corps field office -- they have defined the procurement strategy to be used in this situation. This example represents the "traditional" Corps procedure (design-bid-build) for facility procurement. Any number of alternative methods are available depending on circumstances outside the scope of this discussion. Note, however, that in defining this procurement strategy, the type of contractual arrangement which will be used has not been mentioned. Some types of contracts may have been eliminated because of decisions made in determining strategy, but selection of contract type depends on many detailed considerations that are not known at the time the strategy is selected.

While procurement strategy decisions are not the subject of this report, they will profoundly affect the type of written contract which is required to record the relationship between the various parties working on the product or project.

Contract Type Selection Within Procurement Strategy

At various times during the procurement process, it is necessary to determine exactly which contractual arrangement or contract type is best suited for the immediate circumstances. The environment of Government contracting places several restrictions on this decision which do not exist in the private sector. These restrictions arise from the policy that, to the greatest extent possible, Government contracts should be awarded on the basis of "full and free competition" (Defense Acquisition

Regulation* [DAR] 1-300, 1-302, 3-807†). Details of specific procedures will be discussed later; the point here is that there is an order of preference for contract type and that one can proceed down the list only by eliminating each type in turn. Sometimes this process of elimination is obvious and routine; at other times it is next to impossible or very subjective.

Assuming that one has arrived at a point in the procurement process where it is necessary to determine the proper contract type for a certain situation, this report will point out which decisions have to be made and explain the nature and background of those decisions. It will not, indeed cannot, give guidance on specific situations or on what decision should be made in any particular circumstance.

An advantage of this organized approach to contract type selection is that it requires consideration of the facts and circumstances *before* a selection is made. An underlying cause of many problems encountered in procurement efforts is that someone makes the selection decision first and then tries to force the facts into a form required for that contract type. As stated in the *DAR Manual for Contract Pricing* (ASPM No. 1): "Sound procurement requires use of the right contract type. The best, most realistic and reasonable price in the world (for the particular requirement at hand) may turn sour if the contract type is wrong." The decisions of the Comptroller General abound with cases where this has happened.

* Complete reference citations appear in the bibliography.

† Formerly ASPR.

3 DEFINITION OF CONTRACT-RELATED TERMS AND CONTRACT TYPES

Definition of Contract-Related Terms

Since different interpretations of terms can make significant differences in the conclusions reached, this section defines commonly used contract-related terms as they are used in this report.

Because of the general nature and wide variety of situations discussed here, many of the terms are used loosely. For example, many times the word *product* is used; for construction this might be a completed building, a functioning sewage system, and so forth. Likewise, statements relating to *performance* have a wide range of meanings. The most obvious meaning deals with a machine which must accomplish a particular function, but it could also mean the proper functioning of a retaining wall. The point to remember is that flexibility is required to fit the terms used to a specific situation.

The word *contract* is also used in many different ways, which can lead to confusion and possible misunderstanding. Since the discussion here is limited to construction, use of the word "contract" will be understood to mean a legal agreement for procurement of construction.

A variety of methods can be used to transfer the details of what is to be accomplished from the originator to the builder. For construction, the most common way of transferring this information is through *detailed plans and specifications*. Another way is to prepare plans and specifications in less detail and include in the specifications an explanation of the "performance" which is desired. The third way is to explain the problem or result desired to potential contractors and allow them to propose solutions. As shown later, under the proper conditions each of these procedures is compatible with any of the contract types. Contract type determination will depend more on the quality and extent of the plans and specifications than on the method used for their presentation. The effect of the preparation of plans and specifications on selection of the "proper" contract type will be discussed in Chapter 4.

Several of the terms used in the flowchart narrative (Chapter 4) also need clarification.

Contingency is the amount that a prudent contractor would add or allow in a bid or at negotiations for factors that might adversely affect profit. The key is that these factors can be foreseen without any special knowledge other than any contractor would be expected to have. Whether or not they actually happen will not be known until after the contract is completed (ASPM No. 1, p. 1-4, Realistic Prices).

Possible changes are those potential occurrences that the contractor is aware may happen because of his* position as owner/designer or from past experience with the Corps. Further, they are things about which nothing can be done at present. An example might involve equipment which is still to be designed but for which a mounting must be constructed in this contract.

As used here, *cost* is the amount the contractor spends to accomplish the necessary work and *price* is the amount the Government pays for the completed contract. At various times, the item under consideration may be either cost or price. The subject of cost/pricing is well covered in the *DAR Manual for Contract Pricing* (ASPM) as well as in DAR Section XV and 3-807.2. In some of the determinations, the term cost is used alone; in these situations the consideration is of what the cost to a contractor would be for that item or that contingency. Consideration is given later in the process to the way profit is added to determine the final *price* the Government will pay for the work. It is not necessary that the terms be differentiated during the negotiations. The use of the term "cost" in this way should not be thought to mean "cost type contract."

Next, it is necessary to clear up confusion over the meaning of three often misused terms: competition, advertising, and formal advertising. *Competition* occurs because two or more companies want to do business with the Government and are given an opportunity to compete in some way for a contract. This competition can be solely on the basis of price, or may involve other factors such as product performance, delivery time, or expertise. Competition is a function of the marketplace. It is encouraged by the Government and the Government uses it to secure goods and services at "competitive" prices. However, competition is not caused by the Government and the mere fact that the Government wants to purchase something does not mean that there is competition. As demonstrated later, competition can be more vigorous under the methods of negotiated procurement than under formal advertising because more factors can be considered.

Advertising stems from the Government policy, stated in both statutes and regulations, that all procurements shall be competitive to the maximum extent practicable (DAR 1-300.1 and 1-1201). This requires that as many suppliers as practical be notified and given the opportunity to compete. For this reason, Government procurements are advertised (publicized) in publications such as trade journals and the *Commerce Business Daily* to ensure that interested parties are informed. The advertisement states whether the procurement is to be "negotiated" or "formally advertised."

* Male pronouns are used throughout this document to represent both genders.

Formal advertising is used only by Government and public organizations which must assure that everyone has an equal opportunity to bid. This is a formal procedure in which potential contractors send in sealed bids on the same product and the lowest "responsive and responsible" bidder gets the award. The entire concept of "responsiveness" is only applicable to formal advertising (DAR 2-301a). To be responsive, an offer must comply in all material aspects with the requirements of the invitation for bid. Consequently, every bidder is competing to provide equal services or products. Under the method of negotiation, or in the private sector, if an offer does not comply, it can be discussed and either the contractor can change the offer or the requirement can be changed. Other procedures and restrictions are also associated with formal advertising, as explained in DAR Section II, ECI Section II, and documents such as *Federal Procurement Law*. A major advantage of formal advertising is that, since it has been in use for a long time, many of the situations which can cause disagreement have occurred. Thus, there are a large number of court and board decisions which serve to further define the procedure and help to avoid procedural irregularities and award protests. This is one reason that formal advertising is the preferred method for Government procurement (DAR 1-300.2).

In some situations, all the requirements for formal advertising cannot be met. These situations are also covered in the statutes and regulations (DAR 1-300.3, 3-401(b)(6)). If a situation falls under one of 17 exceptions described in DAR (Section III), and it is determined that formal advertising is not feasible under the prevailing circumstances, then the method of *negotiation* can be used. When this occurs, the procurement will be publicized and every effort will be made to ensure competition for the award. In this case, although formal advertising procedures are not required to be followed, they are replaced by procedures for negotiation which are also given in DAR. The negotiation method has great adaptability to special or unusual situations, but this versatility can also cause problems. Since the exact procedure can change to fit the occasion, new situations can occur which have no precedence in court or board decisions. Also, it is harder to ensure that everyone understands exactly what is going on and is given an equal chance to compete. Other problems not encountered in formal advertising occur because discussions are allowed between the Government and potential contractors. In the course of these discussions, the Government may inadvertently transfer ideas originated by one contractor to another, to the detriment of the first. It is also hard to ensure that the Government gives equal help or clarification to each contractor. For these and other reasons, negotiation is allowed only when the situation makes formal advertising unusable.

There is sometimes confusion over terms dealing with procurement methods, administrative conveniences, and letter contracts. These terms are not covered here because they do not deal with pricing considerations. Letter contracts in particular are often confused with "types" of contracts. The "letter contract" is merely a special form of notice to proceed and does not involve the "type" of contract as the term is used in this report. Any of the contract types discussed here could be issued as letter contracts under appropriate circumstances.

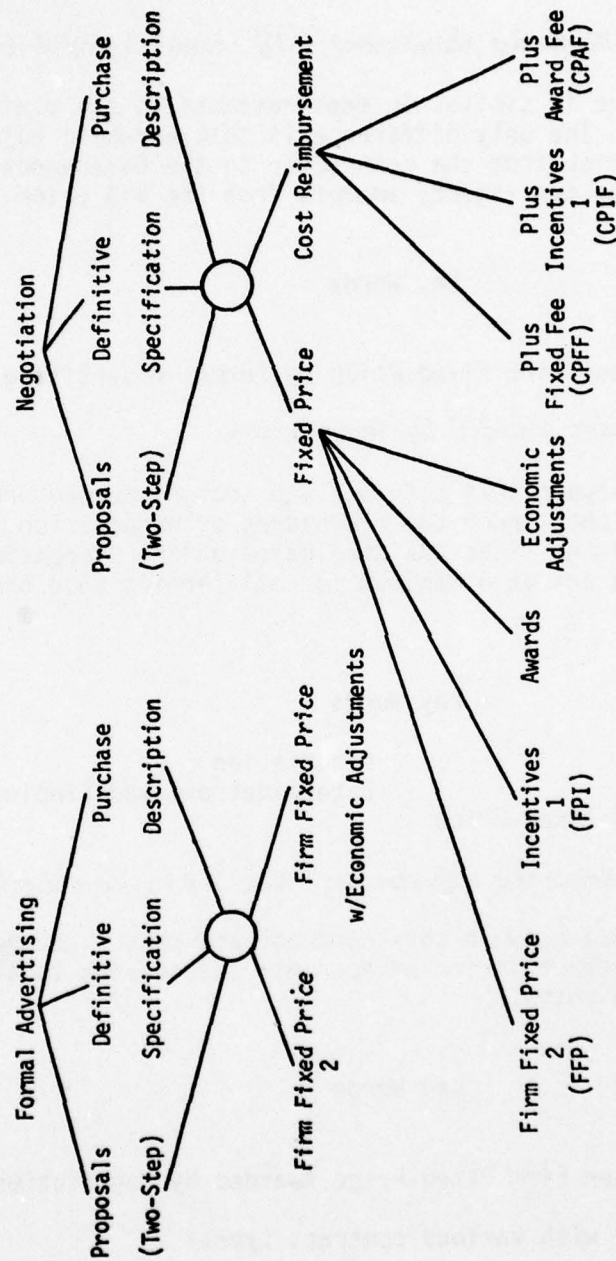
Note that the discussion so far has not mentioned contract type. When formal advertising is used, the regulations allow only two possibilities for contract type: firm fixed-price and firm fixed-price with economic adjustments (DAR 2-104). Under the negotiation method, however, any of the contract types described in DAR may be used. These relationships are shown in Figure 1. As discussed in the next section, firm fixed-price is the preferred contract type, under either formal advertising or negotiation (DAR 3-401(b)(6)). The procedure for arriving at the best contract type for a given situation will be discussed in the flowchart narrative (Chapter 4).

Description of Contract Types

After each of the following brief descriptions of contract types is a list of key words which can be used to locate references in the subject index (the appendix) that describe the particular subject in detail. Remember that negotiated contracts may have combinations of features. Since all combinations cannot be anticipated, there may be instances where all the key words necessary to cover a specific contract are not given below. However, they may be found in the appendix.

Firm Fixed-Price by Formal Advertising

A firm fixed-price contract awarded by formal advertising is the preferred method for Government procurement. It provides for a price which is not subject to any adjustment by reason of the cost experience of the contractor in performance of the contract. This places maximum risk on the contractor, relieved only by contract provisions for changes or modifications. This type of contract imposes a minimum administrative burden on both parties. Under the formal advertising procedure, award is made to the lowest "responsible and responsive" bidder, which normally provides maximum opportunity for competition and insures that all bidders are treated equally. Use of this procurement method and contract type requires that the contract requirements be stated in unambiguous detail and that cost information be available and relatively stable. A large number of court and board decisions relate to use of this procurement method and contract type, which is a distinct advantage when questions arise concerning the procedure.



DAR describes other contractual arrangements which cannot be distinguished by pricing terms. These deal with procurement methods (i.e., indefinite delivery contracts and basic ordering agreements), with administrative conveniences (i.e., basic agreements) and with special authorizations to proceed (i.e., letter contracts). These will not be discussed in conjunction with types of contracts. For further information see DAR Section III, Part 4 or the DAR Manual for Contract Pricing (ASPM #1).

1. Incentives may be either firm for the life of the contract or determined successively. They may involve performance, price, or schedule as the situation requires.
2. Firm Fixed Price contracts may utilize lump sum or unit price breakdown techniques, or a combination. This is discussed in DAR 18-201 and in ER 1180-1-1 (ECI) 7-671-1.

Figure 1. Relationship of construction contracts.

Key Words

Competition	Formal Advertising (all sub-items)
Responsibility	Responsiveness
Variation in Quantity	Two-Step Formal Advertising
Contract Types - Firm Fixed-Price	(if appropriate)

Firm Fixed-Price with Economic Adjustments, by Formal Advertising

This contract type is similar in most respects to the plain firm fixed-price contract. The only difference is that economic adjustments transfer some of the risk from the contractor to the Government and eliminate corresponding contingency amounts from the bid price.

Key Words

Economic Adjustments
See also key words under Firm Fixed-Price by Formal Advertising.

Firm Fixed-Price Contract Awarded by Negotiation

The difference between this contract and that discussed under formal advertising is that under the procedures of negotiation, specific items can be discussed and risks assigned based on the discussions. The administrative details are at a minimum for all parties once the contract is established.

Key Words

Competition	Negotiation
Cost/Price	Determinations and Findings
Contract Types -- Firm Fixed-Price	

Firm Fixed-Price with Economic Adjustments, Awarded by Negotiation

The only difference between this contract and that discussed under formal advertising is the addition of economic adjustments to allow for variations in resource costs.

Key Words

Economic Adjustments
See also key words under Firm Fixed-Price Awarded by Negotiation.

Incentives (to be used with various contract types)

Government procurement policies recognize that, while profit is the basic motivation for a business enterprise, a contractor will strive to optimize, not maximize, profits. That is, he will compare the reward which might be expected to the effort required and make adjustments for the risk that things might not work out as planned. Incentive contracts use the drive for financial gain under risk conditions by rewarding the contractor increased profits for attaining goals which the Government considers important. These goals may involve such factors as target costs, performance, or schedule. Fixed-price contracts can provide special incentives for goals which might otherwise not prove attractive to the contractor. In cost-type contracts, the Government has accepted a large amount of the risk; therefore, goals backed by reward and penalty incentives are necessary to motivate a contractor to strive for the desired results.

Incentive contracts cannot be used unless the contractor's accounting system is adequate for price revision purposes. Incentives should be based on objective, measurable criteria about which the contractor will be informed. These criteria must be reasonable and attainable. There should be an equal *probability* of overrun or underrun of cost targets, not necessarily equal amounts. Risks in the contract can be distributed by the agreement as to how these overruns and underruns will affect the contractor's profit.

Key Words

Ceiling Cost/Price	Competitive Range
Contract Types -	Negotiation
Fixed-Price Incentive	Range of Incentives Effectiveness
Cost Plus Incentives	Share Lines
Incentives (all subitems)	Risk
Range of Cost/Price	Target Cost/Price

Cost-Reimbursement Contracts

In general, cost-reimbursement contracts provide for (1) payments to the contractor of allowable costs incurred in performance of the contract to the extent prescribed in the contract, and (2) a specified monetary consideration (fixed fee). In return, the Government is entitled to receive from the contractor the personnel, plants, and services specified in the contract. These contracts are used only when the uncertainties involved in performance are of such magnitude that costs cannot be established within any reasonable range that would permit other types of contract to be used. Cost contracts are often accompanied by incentives to replace the motivation that is lost by the "cost plus" approach.

Under cost reimbursement, the contractor is theoretically engaged in performing a contract without risk, as distinguished from a fixed-price contract, where he must bear the risks, costs, and liabilities. Since the cost-reimbursement contractor is expending funds subject to reimbursement (plus a fixed fee), the contracting officer must possess a high degree of business and administrative skill, as well as engineering and construction "know-how." Unlike fixed-price contracting, a strong fiduciary relationship exists between a contracting officer and a cost-reimbursement contractor. The very reasons which made the use of a cost-reimbursement contract necessary also require the Government not only to closely monitor the contractor's activities, but also to participate in project management. This places great pressure on the Government's decision-making procedures and on the personnel administering the contract.

Cost-type contracts should be thought of as a last resort when large amounts of uncertainty are present but the procurement must continue for other reasons. Even in this situation, as many aspects of the procurement as possible should be handled under fixed-price, or incentive, concepts.

Key Words

Competition	Competitive Range
Contract Types --	Cost/Pricing
Cost Plus Incentive	Fee Limitations
Cost Plus Award Fee	Risk
Determinations and Findings	Negotiation (all subitems)

Award Fees (to be used with various contract types)

Award fees are used when achievement must be measured by subjective evaluation rather than objective criteria. Objectives or criteria for performance are established and given to a contractor. After completion of the work, a review board determines how well he has met these criteria. A contractor has the opportunity to participate in the evaluation by supplying data, but the amount of the award fee earned is determined unilaterally by the award board.

An award may be used with any type of contract when it is to the Government's advantage. Awards are most often used in conjunction with cost-type contracts where the Government has accepted most of the risk and needs some method to motivate the contractor to accomplish objectives which can only be subjectively evaluated. In most cases the fee consists of two portions: (1) a fixed amount which does not vary with performance and (2) an award amount sufficient to provide the necessary motivation.

For maximum motivation, the contractor should be completely aware of how he is to be evaluated and must believe that he has the opportunity to earn the maximum fee, based on the stated criteria. This requires that realistic and meaningful values be assigned to each parameter by Government personnel knowledgeable of the situation. Although the final decision will be subjective, the standards for acceptable performance under each of the criteria should be firmly established and understood by all parties during the negotiation.

Key Words

Contract Types -- Cost Plus Award Fee Incentives (Multiple Incentives)
Incentives (Award Fees)

Cost Plus Fixed-Fee Contracts

The cost plus fixed-fee contract is a cost reimbursement contract which provides for the payment of all allowable costs and an additional fixed fee. Since the contractor has a minimum incentive for controlling costs, under these conditions this type of contract is used only when the performance or even scope of the work is virtually unknown.

Since this type of contract requires maximum expertise from those who negotiate and administer it, OCE has issued special regulations (ER 415-345-270) dealing entirely with cost plus fixed-fee contracts and has established a negotiation team to assist when the use of this contract type is contemplated.

Key Words

Competition
Contract Type -- Cost Plus Fixed-Fee
Determinations & Findings
Negotiation

Competitive Range
Cost/Pricing
Fee Limitations
Risk

4 FLOWCHART FOR SELECTING CONTRACT TYPE

Use of the Flowchart

The contract type selection flowchart (Figure 4 on page 67) is a "roadmap" which describes the various possible paths to get from procurement strategy decisions to the selection of a proper contract type for some identifiable portion of construction. Figure 4 is a foldout so that the reader can refer to it while following the narrative in this chapter. The numbers in this narrative correspond to the numbers on the decision blocks (DBs) on the flowchart. Note that the numbers do not represent the *sequence* of actions since the same decision is often required at more than one place on the chart. Also, when the same discussion is appropriate in several places, it is presented once and referenced from other DBs.

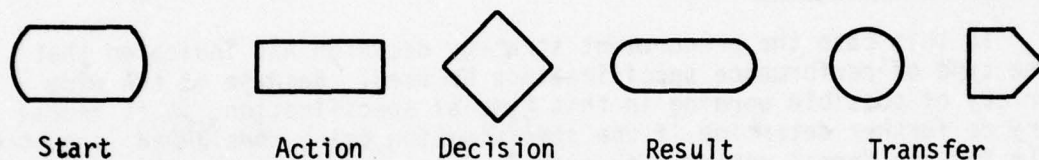
The language and the order of decisions in the flowchart are set up for construction contracts. Although the principles do not change, many of the decisions themselves or the wording of the decision will change for contracts involving other supplies or services (e.g., A/E services).

The flowchart is arranged so that the user begins with consideration of the preferred method for Government procurement -- formal advertising. The regulations require that in order to use any other method it is necessary not only to show that the alternative is appropriate but also that formal advertising is *not* appropriate (DAR 3-101). DAR states a definite order of preference for contract types to be used and definite methods for arriving at those types (DAR 3-401(a)(1), 3-401(b)(6)). One cannot use a type or method lower in the order except by proving that the more preferred type or method will not work. Further flowchart decisions deal with the documentation necessary to secure authority to negotiate and cover contract type selection under negotiation, beginning with the preferred contract type under that procedure.

Note that the best contract type will not always be the one preferred by those setting up or administering the contract. The environment of Government contracting contains restrictions not present in the private sector. Government purchases must be made (1) from the lowest responsive and responsible bidder, or (2) at a negotiated price that is fair and reasonable for the actual *minimum* needs (DAR 3-801.1). Both of these methods must be based on open competition to the greatest extent possible. This means that many times there is no way to favor a particular contractor because his work is of higher quality than others who meet the minimum requirements of the Government. Also, the Government often pays contractors to assume risks that an owner would be willing to bear in the private sector.

In spite of the yes/no results indicated for the decision blocks, very few of the decisions will ever have clearcut yes/no answers. These questions and the discussion that goes with them can only provide background for the decision and indicate what decisions must be made, what impact the decision might have, and, in some cases, where guidance or regulations on the subject can be found. Decisions must still be based on the expertise of the individual decisionmaker.

The following graphic conventions are used in the flowchart:



Initial Decision

As previously discussed, the selection of procurement strategy is beyond the scope of this flowchart; it is assumed that the strategy decision has been made before the chart is consulted. For construction contracts, therefore, there are three possible entry points to the flowchart: (1) The Corps (or an A/E under separate contract) will produce *detailed plans and specifications*, (2) the Corps (or an A/E under separate contract) will produce *performance specifications*, or (3) the Corps will evaluate *solutions/designs/concepts* from potential contractors based on a statement of the intended function. When some portion of a potential procurement involves a combination of these choices, they should first be evaluated separately and combined, using the flowchart, only if the results obtained indicate the same or compatible contract types for the separate portions.

1 Plans and Specifications

In this case the procurement strategy decision has indicated that detailed plans and specifications will be made available. One of the fundamental principles of formal advertising requires that all potential contractors have an equal opportunity to bid on identical products and conditions. DAR 2-301(a) states that "...bid must comply in all

material respects...so that...all bidders may stand on an equal footing...." This requires that the plans and specifications be understandable without discussion or clarification and be subject to the same interpretation by everyone. This decision block asks whether plans and specifications reasonably close to these standards will be available at the time being considered for invitation for bids. If the answer to this decision is "yes," consideration moves to DB 5. If these plans and specifications are not available or not of the required quality, the answer must be "no" and consideration must move to the questions addressed in DB 4.

2 Are Performance Specifications (Purchase Descriptions) Suitable for Formal Advertising?

In this case the procurement strategy decision has indicated that some type of performance specifications be used. Because of the wide variety of possible wording in this type of specification, it is necessary to further determine if the specification being considered is suitable for the formal advertising process. Remember that formal advertising requires that all competitors have an equal opportunity to bid on identical products and that discussions and clarifications of intent are not allowed unless communicated to all bidders. The specifications must be explicit in all details which will be considered in determining responsiveness. This may be difficult, if not impossible, with performance specifications, depending on the nature of the item/facility being described.

Purchase descriptions or performance specifications are described in DAR 1-1206.1 as follows, in part:

...A purchase description should set forth the essential physical and functional characteristics of the materials or services required. As many of the following characteristics as are necessary to express the minimum requirements of the Government should be utilized in preparing purchase descriptions:

- (i) common nomenclature;
- (ii) kind of material, i.e., type, grade, alternatives, etc;
- (iii) electrical data, if any;
- (iv) dimensions, size or capacity;
- (v) principles of operation;
- (vi) restrictive environmental conditions;
- (vii) intended use, including --
 - (A) location within an assembly, and
 - (B) essential operating conditions;
- (viii) equipment with which the item is to be used;
- (ix) other pertinent information that further describes the item, material or service required.

Purchase descriptions shall not be written so as to specify a product, or a particular feature of a product, peculiar to one manufacturer and thereby preclude consideration of a product manufactured by another company, unless it is determined that the particular feature is essential to the Government's requirements, and that similar products of other companies lacking the particular feature would not meet the minimum requirements for the item. Generally, the minimum acceptable purchase description is the identification of a requirement by use of brand name followed by the words "or equal." This technique should be used only when an adequate specification or more detailed description cannot feasibly be made available by means other than reverse engineering (see 1-304) in time for the procurement under consideration. Purchase descriptions of services to be procured should outline to the greatest degree practicable the specific services the contractor is expected to perform...

If other than minor details in a particular specification are given by the performance specification (purchase description) method, it may be a false economy to force the procurement into the formal advertising pattern. While formal advertising appears to have significant administrative advantages initially, problems related to small, unspecified details may occur during construction and even later during use. As a general rule, performance specifications should be examined very closely before determining that they are suitable for the formal advertising procedure.

In summary, a "yes" answer for this decision block means that (1) the performance specifications to be used are clear and unambiguous as to the exact details which will determine responsiveness and as to the criteria which will be used in selection, (2) no additional communication (other than formal amendments) will be required to transmit the intent of the specification to potential bidders, and (3) all bidders will respond with proposals containing identical products. (*Identical*, as used here, means within a range which would be considered identical for bidding responses. See DAR 2-301(a). This is different from the "competitive range" of negotiation procedures.)

A "no" means that all of these conditions are not met and that further consideration is needed, but that most probably formal advertising will not be appropriate.

3 Time and Suitability for Two-Step Procedures

The entrance to this decision block indicated that the primary procurement strategy involves evaluating contractor-proposed solutions/designs/proposals for the facility. Two-step formal advertising is a

combination of formal advertising and negotiation that in certain situations combines some of the advantages of both methods while satisfying the requirement that formal advertising be the preferred method of procurement. A complete discussion of two-step procedures can be found in DAR Section II, Part 5 and ER 1180-1-7. The requirements for the "formal advertising" portion are the same as if definitive specifications were in use (DAR Section II, Part 1).

A word of caution is in order for potential two-step users with regard to problems in administration. As mentioned in DB 2 in conjunction with performance specifications, and in the references above, under this procurement procedure the quality and/or minor details of the product often will not be exactly as the Government might prefer. When it is anticipated that two-step procedures will be used, extreme care must be exercised in writing the request for proposals (RFP) to insure that *all the necessary* qualities are listed. Otherwise the work will be accomplished to the minimum standards compatible with the proposal and the optimization of the contractor's profit.

During the evaluation of proposals, the Government cannot favor one proposal if the reason is not listed in the criteria for evaluation. For example: suppose the Government requests proposals for a concrete sidewalk which list thickness and strength of the concrete. Two proposals are received which are identical except that one offers a colored surface. The Government personnel think this is a great idea. However, when the price proposals are received in the second step, the two prices differ by the amount necessary to buy the coloring. The award must go to the contractor offering the less desirable plain concrete and the lowest price because the coloring was not specified as a requirement.

A further word about requirements and understanding of the RFP by different contractors -- great care must be taken to ensure that the requirements are clearly stated, because the various proposals which are determined acceptable will be considered as *identical* products for the second step of the procedure, and selection at that point will be made *solely* on the basis of lowest price. Misunderstandings in the requirements may lead one or more competitors to protest that their price would have been lower if they had known the interpretation or intent of the specifications. As an example: in many places the Corps requires high quality concrete and has very rigid standards for material and procedures to insure this quality. Industry standards for items such as sidewalks are very different and result in much lower construction costs. If a contractor who was involved in Corps construction requiring the higher standards was making a proposal under the two-step procedures, he might erroneously assume that the same standards held. Although he might have no basis for complaint other than his own oversight, these types of problems are much more easily handled through

clarity in specifications and meaningful discussions with contractors (when permitted) than by award protest procedures.

In view of the preceding discussion, it is apparent that performance specifications will not work for certain types of products or facilities. Before a procurement effort is undertaken using this method, the criteria upon which responsiveness will be based must be thoroughly examined to ensure that (1) all necessary criteria are listed and (2) they are clearly and unambiguously presented. Remember that under the two-step procedure, the award must be made on the basis of the lowest price offered in the second step, considering all acceptable proposals from the first step as *identical products*.

As for the time requirement, since a proposal requires much more work on the contractor's part than a bid, the two-step process will take considerably longer than the bidding portion of normal formal advertisement. In addition, although preparing an RFP requires less time than preparing detailed plans and specifications, it is still time consuming. Any of these times can be decreased only at the risk of increased error, misunderstanding, or omission on the part of all concerned.

The two-step procedure has some of the advantages of negotiation while remaining within the formal advertising framework. The major advantage is that it allows discussions with the prospective contractors during the first step, which can eliminate many difficulties encountered in a pure formal advertising procurement. Another advantage is that the Government is not required to decide between essentially equal proposals that use different methods or approaches. As long as the proposal submitted in the first step meets the minimum Government criteria, it is considered acceptable. The second step permits formal advertising procedures to be applied to the product described in step one; assuming adequate competition, this should result in the lowest possible price for a product which fulfills the purpose.

In summary, a "yes" decision for this block requires that (1) the product being procured be adaptable to both steps of the two-step procedure, (2) there be sufficient time for all parties to accomplish their jobs, and (3) the Government be willing to accept the disadvantages discussed above and in the references. A "no" decision will lead to further evaluation of alternatives.

4 Time/Value Analysis of Situation

This is an extremely important decision which is very hard to make objectively. At this point, it has been decided that the preferred method of formal advertising is not appropriate for the procurement.

Several questions will determine whether this situation can be remedied. The sequence is shown in Figure 2.

a. Will additional time allow the problem to be corrected?

b. Is that time available in terms of when the facility or product is needed?

In some cases addressing these two questions will produce an obvious answer; in others additional questions must be addressed. If the answers to both a and b are "yes," then follow the path marked "wait" out of the decision block. If the answer to one or both is "no," continue with question c.

c. Will the process of negotiation allow the problem to be resolved?

Answering this important question requires knowledge of how the negotiation process will be applied to the particular situation. Many circumstances will lead to this decision block when the problem cannot be resolved by selection of different contract types -- for example, when certain facts are not known or decisions have not been made. Poorly defined procurement efforts will eventually lead to cost-plus type contracts or to costly change orders. This is not in the Government's best interest and should be avoided. A "yes" answer to question c requires that the problem be clearly defined and that a solution be in sight which is practical and can be reached through negotiation. *The process of negotiation is not a cure for all problems nor is it an easy way out from poorly defined requirements.*

d. How does the time that will be required to reach negotiation compare with the time that would be necessary to correct the problem so that formal advertising can be used?

In Government procurement one can often arrive at the situation where "you can't get there from here." While all the facts and desires might point to negotiation as the answer, the process of justification and approval might take more time and paperwork than correcting the situation for formal advertising. This will depend on the dollar amount involved, the personnel, past experience with negotiation, understanding of the situation, agreement on the urgency, and many other factors unique to a particular situation.

The main point of this decision block is to require an extensive, objective assessment of the situation before deciding that negotiation is necessary or that the problem should be returned to formal advertising. The time for this analysis will be well spent, whatever the decision. If formal advertising is chosen, it will mean returning to a

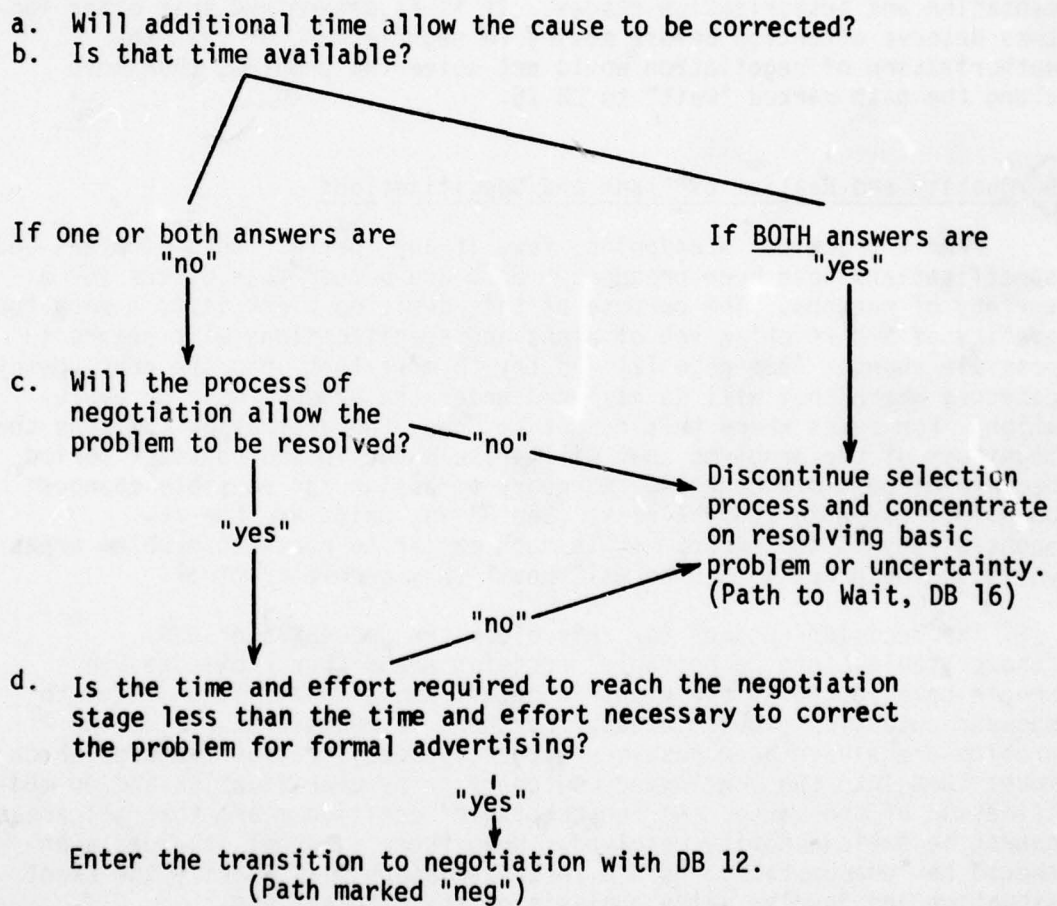


Figure 2. Summary of the operations involved in decision block 4.

more desirable procurement method with less room for surprises and mistakes. If negotiation is selected, the facts which led to this decision will clearly support one of the exceptions to formal advertising and thereby ease the paperwork and administrative effort required for approval.

Rather than trying to justify preconceived notions of which method or contract type to use, it is far better to organize the large mass of subjective data into recognizable facts and hard decisions. Once this is done, the procurement and contract type decisions become obvious for most situations. At the least, there is a basis for evaluating trade-offs and establishing negotiation objectives.

If, on the basis of the above analysis, it is determined that negotiation is justified, follow the path marked "negotiation" to the documentation and authorization stages. If it is determined that other factors deserve attention before moving to negotiation, or that the authorization of negotiation would not solve the problem, then move along the path marked "wait" to DB 16.

5 Quality and Realism of Plans and Specifications

From a practical standpoint, few, if any, perfect sets of plans and specifications have been produced. Some are better than others for a variety of reasons. The purpose of this decision block is to assess the quality of a particular set of plans and specifications with regard to possible changes (see page 12) and try to move them into the contingency category where they will be assigned under the process of risk evaluation. For cases where this cannot be done, the evaluation concerns the magnitude of the problems that will arise later in the contract period because of possible changes. Adequacy of design and possible changes both fall under Category 3 risks (See DB 7), which are the responsibility of the owner. It is much easier to confront problem areas early in the process than to wait until they become critical.

The decision choices for this block are "acceptable" and "unacceptable." An "acceptable" decision means that knowledgeable people have looked at the plans in detail and *with sufficient time* to uncover potential problem areas. Further, it means that all of the problem areas have been resolved either by specification language which moves them into the contingency category or by clarification and/or modification of the cause. An "unacceptable" decision means that all areas cannot be satisfactorily resolved. When there is doubt, the decision should be "unacceptable," since later decisions will clarify the exact situation and involve value analysis of the alternatives.

6 Could/Should Any Portions of the Contract Be Separated?

There are several reasons for breaking a contract into two or more parts. The primary reason is that the parts are incompatible, or that work on one part will interfere in some way with the other -- perhaps because of the nature of the work, the location, or facilities to be used. Another reason concerns the general question of competition that will be addressed more completely in DB 9. Because of conditions in the marketplace, the Government may have to break a large contract into smaller pieces to ensure adequate competition. All of these possibilities and any others which could occur should be examined objectively and thoroughly. The time and effort necessary to examine this question at an early date is well justified by the trouble that can be avoided if the proper decision is made.

If separation would help the situation for administrative reasons or in obtaining competition, follow the path marked "yes" and begin at the start block with the new assumptions. Do not hesitate to take this path, at least in a hypothetical situation, because it causes consideration of several options which will affect the competition. One of the options for contract content might prove to be of greater benefit to the Government than the first one chosen.

When separation is obviously not possible, or has been determined to be less practical, follow the path marked "no" to further considerations under formal advertising.

7 Evaluation of Contingencies

One of the fundamental elements of construction contracting is the assumption of risk. This complicated subject is probably the key factor in determining how smoothly any contract will function. It would be safe to say that any disagreement on subjective factors during construction stems from misunderstanding or silence on the assumption of risk. Risk, as it relates to contract type selection, will be discussed here in some detail, with appropriate references to more rigorous discussion elsewhere. This general discussion will be followed by discussion of this specific DB and further discussion under DBs 22, 22A, 22B, and 22C.

For evaluating the assumption of risk and the corresponding amount of allowance for contingencies in a contractor's price, it is useful to define three categories. *Category 1* includes factors related to the day-to-day operation of a construction effort, such as adequacy of formwork, bracing, shoring, routine problems related to labor, worker mistakes, safe facilities and conditions, adequate supervision of operations, and many other items involved in normal construction operations. These might be thought of as the contractor's risk of being in business.

Category 2 risks involve the resources necessary to construct the project which are beyond the control or influence of the contractor. Examples include the availability of specified materials, labor, or equipment. ("Availability" usually means available at an acceptable price, since very seldom are items not available at all.) *Category 3* involves risks that are a function of or related to the work or the work site. These too are beyond the control or influence of the contractor. Examples are "unusual" weather, "unexpected" floods, "changed" site conditions, inadequate design, and owner-required changes. The number of subjective terms in the *Category 3* definition indicates the problem of defining and assigning risk in that category.

In the ideal situation under Government contracting procedures, the categories of risk are assigned as follows: *Category 1* risks are the sole responsibility of the contractor (or assigned to his insurer). *Category 2* risks are provided for in the form of economic adjustments for variations in cost/price (availability) beyond what is "normal"; and *Category 3* risks are the ultimate responsibility of the Government (or any owner), although many times the Government will assign some of them to the contractor in return for a contingency amount in his price. Once again the subjective descriptions indicate potential problems with interpretation for any actual situation.

The Government (or owner) may avoid risk responsibility only by paying someone else to accept it. Setting aside for a moment the problem of agreement on the exact extent of each party's risk, the amount of the contingency required by the contractor for the assumption of this risk is often so large as to be economically or prudently impractical. In this case, if insurance cannot be obtained at better rates from other sources, the Government retains the risk responsibility.

The extent of each party's risk responsibility is described by clauses in the specifications. As mentioned, in almost all Government contracts the contractor is held responsible for *Category 1* risks. The economic risks in *Category 2* are also usually assigned to the contractor except for unusual circumstances or very long contract times; in the latter cases economic adjustments are added which shift some of the risk from the contractor to the Government. That leaves, as the subject of this decision block, the identification, description, and assignment of *Category 3* risks. Under formal advertising procedures, a cost/price range cannot be assigned to a risk as can be done under negotiation procedures. There can be no discussion between Government and contractor as to the meaning or intent of a particular clause; everything must be precisely defined to provide a clear choice for each uncertainty (see DAR 2-301(a), Responsiveness). Clauses that are unclear, ambiguous, or do not consider all possibilities will result in problems with changes and/or claims during construction.

It is beyond the scope of this document to discuss cost estimating, trade-off analysis, specification writing, and experience necessary to properly evaluate and assign risk. The purpose of this decision block is to determine that this analysis has been carried out and that the various risks have been *clearly* assigned. This requires first that each risk be evaluated as a contingency amount by itself, then combined with all other contingencies to develop an overall cost/price picture for the procurement. Next, the risks must be assigned to the various parties in concise, unambiguous terms that leave no room for argument later. Finally, the decision must be addressed as to whether the facts and decisions still allow determination of a firm fixed-price that does not contain contingency amounts unacceptable to the Government or such harsh terms that no prudent contractor would bid. In short, the result should assure "fair and reasonable prices calculated to result in the lowest overall cost to the Government" (DAR 3-801.1). If the risk assignments are properly handled, marketplace competition should provide the lowest fair and reasonable price.

If the above analysis is not carried out properly, a situation can arise in which all bids contain a contingency amount for an ambiguous clause in the specifications -- and when the contingency does occur, it is found to fall under the "changed condition" clause. In effect, payment has been made twice. This decision block is the place to check the specification provisions to make sure that this situation cannot occur. If this check shows that all of the above considerations have been satisfactorily addressed, take the "OK" path to consideration of economic adjustments. If not, take the "HI" path to DB 4.

For a full discussion of the various aspects of risk definition and assignment, see the references listed under the following terms in the subject index:

Risk

Motivation

Share Line (Sharing Risk)

Risk assignment is also covered under the discussion of incentives beginning on page 45.

8 Are Economic Adjustments Needed?

Economic adjustments are made for risks explained under Category 2 in DB 7. As stated in that block, either party can assume the risk but it is extremely important that the assumption be clearly and unambiguously stated. If the Government cannot economically and

prudently assign the risk to the contractor in return for a contingency in the bid price, then the plans and/or specifications should be adjusted. A complete discussion of types and methods of economic adjustment is presented in DAR 3-404.3. Note that economic adjustments are allowed under the concept of formal advertising but that they must be clearly stated and based on criteria not under the control or influence of the potential contractor.

This decision block serves to distinguish firm fixed-price contracts from those with economic adjustments. If economic adjustments are necessary, follow the path marked "yes." If they are not required, the path marked "no" should be followed. The next DB on each of these paths is DB 9.

9 Is There Both Time and Competition Available for Formal Advertising Procedures?

The first portion of this decision concerns the time necessary to perform the administrative functions required before construction can begin. The Government takes a significant amount of time to perform its administrative procedures, advertise to the industry, and allow contractors sufficient time to prepare bids. If the time allowed is inadequate, mistakes, poor planning, and other problems are sure to occur (see DAR 2-202.1, Bidding Time).

The second portion of this decision concerns the adequacy of the competition. Although this adequacy cannot be determined precisely until bids have been received, some preliminary attention must be given to the marketplace conditions affecting competition for the particular project. Competition is one of the methods by which the Government can obtain products for the lowest fair and reasonable cost (DAR 1-300.1 and 3-807.1); however, the fact that bids have been received does not assure that adequate competition has taken place.

The invitation to bid should be examined to insure that no unintentional restrictions might discourage firms from bidding (DAR 1-1201). There should be no unnecessary paperwork and that which is required should be described as clearly and simply as possible. *Many contractors might elect not to bid on the basis of harsh-sounding requirements which in actual practice are never enforced.* Therefore, a continuing effort should be made to match the contract requirements with actual necessities.

At this point there is no guarantee of competition, but it is possible to assure that the specifications are clear and accurate enough to preclude problems later because of misunderstanding. If adequate competition exists, follow the path marked "yes" to references for contract type. If not, follow "no" to adjustments. The path marked "no final"

is followed if adjustments have been tried and competition is still not adequate.

9A) Firm Fixed-Price Contract Awarded by Formal Advertising

The circumstances leading to this point are probably best suited to a firm fixed-price contract awarded through formal advertising. A brief description of this contract type and further references are given in Chapter 3.

9B) Firm Fixed-Price Contract with Economic Adjustments Awarded by Formal Advertising

The circumstances leading to this point are probably best suited to a firm fixed-price contract with economic adjustments to accommodate for uncertain or unstable prices of some resources. The award should be by formal advertising. A brief description of this contract type along with further references for its use are found in Chapter 3.

10) Will Adjustment or Deletion Cure This?

This DB requires an analysis of the problem found in the plans and specifications. On one hand, the plans and specifications should be as nearly perfect as possible, with all details shown and all possibilities accounted for. On the other hand, an entire procurement effort should not be slowed or stopped for some minor problem. The gray area between these two extremes is the subject of the analysis required in this block.

Common problems such as minor omissions, inconsistencies, or ambiguities can be corrected with little effort or time. More serious problems of the same type are less easily corrected; the possibility of deleting the affected section must be explored. If these problems, even the minor ones, are not addressed at this point, they may prevent determination of a "fixed" price during the evaluation of contingencies, thus requiring consideration of negotiation (DB 4). The point here is that if problems can be solved early, it will be possible to avoid the long process of attempting to justify negotiation or the equally serious problem of resorting to modifications and claims procedures during construction.

If the problems can be resolved satisfactorily in a minimum of time, then continue the consideration of formal advertising through the path marked "yes." If a solution is not obvious or the alternatives are not clear, then follow the path marked "no" to the time/value analysis in DB 4.

11 Will Adjustment or Deletion Correct This?

At this point a path that might ultimately lead to negotiation is being followed. Since negotiation is a less desirable option than formal advertising, and since it will eventually require showing that formal advertising is impractical, it is best to examine what might have to be done to allow formal advertising. Although the two procurement strategy possibilities that have led here are generally not the best options for formal advertising, it is possible that at least part of the procurement might be acceptable for this preferred method.

The most obvious solution is to adjust the plans and specifications to the requirements of formal advertising. If this cannot be accomplished practically, then deletion or separation of the problem area should be considered. There is no way to apply strictly objective criteria to this process because of the wide variety of possibilities and factors involved.

If adjustments or corrections can be made, then the selection procedure should begin again with the new information (follow path marked "yes"). If this cannot be accomplished, then move to the time/value analysis of DB 4 (path "no").

12 Reasons for Negotiation

The statutes [10 USC 2304(a)] and regulations (DAR 2-102.1) require that procurement be made by formal advertising "whenever such method is feasible and practicable under the existing circumstances" (DAR 2-102.1), and further that formal advertising shall be used even if existing conditions and circumstances would also satisfy the requirements for negotiation. In recognition of these requirements, a procurement to be accomplished by negotiation must fall under one of the 17 circumstances listed in DAR, Section III, Part 2, "Circumstances Permitting Negotiation." Those 17 exceptions and the DAR paragraphs in which each is explained are as follows:

- 3-201 National emergency
- 3-202 Public exigency
- 3-203 Purchases not more than \$10,000
- 3-204 Personal or professional services
- 3-205 Services of educational institutions
- 3-206 Purchases outside the United States

- 3-207 Medicines or medical supplies
- 3-208 Supplies purchased for authorized resale
- 3-209 Perishable or nonperishable subsistence supplies
- 3-210 Supplies or services for which it is impracticable to secure competition by formal advertising
- 3-211 Experimental, developmental, or research work
- 3-212 Classified purchases
- 3-213 Technical equipment requiring standardization and interchangeability of parts
- 3-214 Technical or specialized supplies requiring substantial initial investment or extended period of preparation for manufacturer
- 3-215 Negotiation after advertising
- 3-216 Purchases in the interest of national defense or industrial mobilization
- 3-217 Otherwise authorized by law.

The exception given in DAR 3-210 deserves further explanation here. The Comptroller General has held that use of this exception requires impossibility, not mere difficulty or inconvenience (52 Comp. Gen. 458, 1973). Its use does not presuppose an absence of competition, merely that competition by *formal advertising* is impossible (52 Comp. Gen. 346, 1972). In addition to the above references, DOD memorandum of policy and procedural guidance as contained in ER 1180-1-7 further explain certain circumstances justifying negotiation (Family Housing). Procedures for obtaining authority from OCE to negotiate are given in ECI 3-102.

13 Preparation of Determinations and Findings (D&F)

Statutes require that a formal determination and finding be prepared when a procurement is to be negotiated (10 USC 2310). These requirements are reflected in DAR, Section III, Part 3. Examples are given in DAR, Appendix J. One example, for justification under the exception given in DAR 3-210, is shown in Figure 3. Further supplementation of the requirements is found in ER 1180-1-1 (ECI), Section III, which requires OCE approval for the use of negotiation [ECI 3-102(b)]. The information required has been the subject of decision

1 JULY 1976

AUTHORIZATION FOR NEGOTIATION**(d) Formats for D&F for Exception (10).****(i) Format (A).****(Military Department and Agency)****Determination and Findings****Authority To Negotiate an Individual Contract**

Upon the basis of the following findings and determination, the proposed contract described below may be negotiated without formal advertising pursuant to the authority of 10 USC 2304(a)(10), as implemented by paragraph 3-210.2(i) of the Armed Services Procurement Regulation.

Findings

1. The _____⁽¹⁾ proposes to procure by negotiation _____⁽²⁾. This equipment is special support equipment for the maintenance of the _____⁽³⁾.
2. Procurement by negotiation of the above described special support equipment is necessary because the manufacturer must have a detailed knowledge of the basic equipment to be supported. The special support equipment to be procured must be specially designed to be compatible with the basic equipment.
3. Use of formal advertising for procurement of the above described special support equipment is impracticable because only _____⁽⁴⁾, the designer, developer and sole manufacturer of the basic equipment, is sufficiently familiar with the design and operational characteristics of the basic equipment to furnish the special support equipment required.

Determination

The proposed contract is for property or services for which it is impracticable to obtain competition by formal advertising.

Date _____

NOTES: ⁽¹⁾ Procuring or contracting activity.

⁽²⁾ Quantity and description of equipment and estimated cost.

⁽³⁾ Describe the basic equipment involved.

⁽⁴⁾ Name of supplier.

See ER 1180-1-(ECI),
on preparation of the D&F by the contracting officer.

3-303 (c) for instruction

Figure 3. Sample justification for use of negotiation method.

block prior to reaching this point in the flowchart, with special emphasis on the decision in DB 4.

In those rare situations where procurement from a sole source without competition is justified for construction contracts, the reported information and the determination and findings should support the decision.

A complete discussion of the General Accounting Office's (GAO) involvement in these procedures is found in *Federal Procurement Law*. In brief, GAO will review the determination, but not the findings, to see if it is reasonable and in accordance with the law (Comp. Gen. B-174791, Oct 20, 1972).

14 Authority to Negotiate

At this point higher authority either approves or disapproves negotiation. If negotiation is not granted (path marked "no" on flowchart), some adjustments might be possible to overcome the objection. This might require returning to various points in the flowchart to change items and perhaps even whole decisions. Each time this happens the user should begin the transition to negotiation with the analysis of DB 4. This will insure that the adjustments have not altered the basic reasons for seeking negotiation or made formal advertising usable.

The adjustments are by necessity slight, since it is usually impossible to drastically change the direction of a procurement effort quickly. When these slight changes are exhausted and authority has still not been secured, follow the path marked "no, final" to consideration of alternatives in DB 15.

15 Re-Examine Situation

This decision block represents a kind of administrative limbo. It has been determined at this point that conditions are not right for the formal advertising process, and, further, that the situation deserves consideration of negotiation on the basis of time/value analysis (DB 4). However, none of the acceptable reasons in DB 12 are considered appropriate by the approving authority. This is a very possible, if not desirable result, and represents a fact of Government procurement. The situation can arise because of different perspectives and priorities at different levels within the organization. Sometimes a "burning issue" in a field office becomes a "problem to be considered" at District level and dwindles into insignificance when compared to the DOD procurement effort. The limbo occurs because the values used in the time/value analysis do not fit into any of the overall DA or DOD considerations as listed in ECI and DAR.

Although the exit paths are not shown on the flowchart because of the range of possibilities, there are three ultimate options:

a. Discontinue the contract type selection procedure and concentrate on resolving the basic fact/condition/assumption which did not allow formal advertising. In some cases time alone will allow resolution.

b. Continue the attempt to secure negotiation authority through the DB 12, 13, 14 cycle. This option should be followed only if supported by firm, defensible facts and assumptions.

c. Begin the contract type selection procedure again with another look at each fact/condition/assumption to see where alternative actions might be possible. Once again, the warning about *forcing* any decision to fit a desired result applies. Improper analysis of the existing situation may help administratively in the short term, but may cause problems later in the life of the product.

16 Wait

There are many situations in which the time is not right for the selection of contract type nor for continuation of the procurement action. This can happen in the hypothetical case also, when it is determined that not enough information will be known or additional work will have to be done at some future time. This is a valuable piece of information. Following the general principle stated in Chapter 1 that the procurement should be formed around the facts of each particular situation, there will indeed be times when the most prudent course of action is to wait. The problem which led to this DB will be obvious from the answers to the previous DBs.

21 Preparation for Negotiation

After the authority to negotiate has been granted, a major shift is required in the thinking of all participants. Negotiation requires knowledge and understanding on the part of the Government negotiators and places additional pressure on the accuracy and validity of the Government cost figures. On the other hand, it allows much more freedom to reach an agreement that not only provides the exact product the Government wants but can also take advantage of the special skills and capabilities of a particular contractor.

The following quote from the DAR Manual for Contracting Price (ASPM No.1) expresses the objective of the negotiations:

Negotiation. There are two principles, each briefly stated. One is that price and contract type should not be agreed to if other terms and conditions of the contract remain open. The other is that selection of contract type, like the work statement and all other terms and conditions, requires a bilateral agreement between Government and contractor. It must represent the best judgment of both contracting parties concerning the contractual arrangement most likely to result in maximum effective performance.

The following general description of the procedure is detailed in the flowchart. Remember that this is not a "once through" procedure but a continuing evaluation in an effort to determine a fair and reasonable price for meeting the contract requirements. This may require one or more passes through the entire procedure in response to changing conditions and new information.

General Description of Negotiation Procedure

1. Identify, describe, and assign a dollar amount to potential problem areas or areas where there might be changes/claims at a later date. This step makes no judgment on the contract as a whole nor does it attempt to evaluate motivation. In some cases the dollar amount which will be determined for a single contingency might be considered fixed. In other cases the uncertainty might not make this possible and the contingency would have to be evaluated as a range; i.e., it will cost at least \$xxx and maybe as much as \$yyy. This is covered in DBs 22, 22A, 22B, and 22C.
2. Bring together all of the individual items calculated in Step 1 above, along with a knowledge of the situation, general conditions, and special conditions which will affect this contract. Based on this information, a subjective internal decision must be made as to whether the contract can reasonably be considered as a "fixed" price, will require a range of possible prices, or cannot be evaluated precisely enough for any fixed-price contract. This procedure and its extensions are covered in DBs 23, 28, and 28A.
3. Using all the information developed so far, the Government will determine (for the hypothetical situation) or negotiate (for the actual situation), proper incentives to motivate a contractor to accomplish those objectives considered important. At the same time, items in the contract will be adjusted to more closely fit the capabilities and expertise of the contractor.

During the negotiation, the contractor should get a clear, detailed understanding of what the Government wants while the Government learns the contractor's capabilities and required motivation. This is covered in DBs 25, 27, 29, and 29A.

4. At this point in a hypothetical situation the bargaining position has been established, and in the actual situation the parties have reached agreement. Now the entire procurement effort must be reviewed to determine that the following criteria have been met: (a) all qualified suppliers have had adequate opportunity to offer their services/products, (b) no unnecessary restrictions have unduly eliminated anyone, and (c) the resultant contract will produce the minimum product required by the Government at a fair and reasonable cost, considering price and other factors. This step is covered in DB 26, the last consideration before contract type selection.

This procedure should be the same no matter when it is used, although the participants will differ at various stages of the procurement. At a very early stage of planning, little detail would be known and any analysis would be based on vague assumptions. Later in the design stage more information is available, especially on the risks of product performance. The first pass after all the facts are available should be performed in-house to determine the position for negotiation and estimate expected responses from contractors. Hypothetical positions can be proposed and evaluated also. These actions form the basis for negotiations and allow the Government negotiator to effectively evaluate trade-offs which may be proposed. It is important also that the negotiator be familiar with the technical characteristics of the procurement, especially as they may affect possible changes or future problems.

One of the strong points of the negotiation method is that it permits discussion before the contract is signed. Negotiation is much easier before agreements have been signed and personal positions have been taken which will later be defended. This can be thought of as a "prenegotiation" of change orders and claims. The mere fact that a potential problem was mentioned during negotiation may smooth the way for successful adjustment if it actually occurs.

A common mistake in negotiation is to predetermine a type of contract and then work to make all the facts and decisions fit that type. It is much better for the negotiator to visualize a shelf of resources which contains performance incentives, schedule incentives, cost incentives, award fees, fixed fees, and economic adjustments, as well as a wide variety of clauses which can adapt an agreement to special situations. The negotiator then sits before this shelf and selects those resources necessary to reach an agreement which reflects the facts of the situation and the agreed-upon risk sharing arrangement. If

incentives are a principal feature of the agreement after this selection process, the final contract would be called a "fixed-price incentive contract," although it might still have features of other types. Much of the discussion in this document and the references is in terms of "pure" contract types. While this is convenient for instruction purposes, in reality few situations fall into a "pure" category. In the final analysis the contract type must accurately and adequately record the agreement between the parties. Any technique necessary to do this should be used when regulations permit (see ASPM No. 1, p. 2-2).

22 Evaluation of Contingencies

The basic definitions of risk and the distribution of that risk are presented in the DB 7 discussion. This decision block is primarily concerned with the risks listed under Category 3 in that discussion. The objective is to identify situations or uncertain factors which a prudent contractor might cover with a contingency amount. If performance problems are evident or additional information needed, it will be obvious from the first that a firm dollar amount cannot be determined for each contingency. In this case, as many costs as possible should be determined and then consideration should move along the path marked "no" to DB 22A for evaluation of the remaining costs.

This decision block does not attempt to determine if the cost/price provides sufficient motivation for any particular objective; this will be determined or negotiated in a later step. Of concern here is the information needed to properly evaluate trade-offs during later negotiation. This evaluation requires a grasp of exactly how much money is involved for each contingency or, put another way, how much money would be involved if a particular clause were taken out, a detail changed, the time requirement extended at a certain point, or responsibility accepted for a particular type of damage.

Regarding risk, one of the main advantages negotiation has over formal advertising is that it allows problem areas to be discussed with potential contractors (see DAR 3-805.3 for limitations and requirements) in order to prevent misunderstanding. This can solve many problems simply by removing uncertainty as to the intent of certain clauses. It also allows contract language to be changed to fit the capabilities of the competing contractors -- thus removing potential for later problems. Maximum use should be made of this capability at this point in the selection process; however, it is improper to tailor the work statement to favor a particular proposal (Comp. Gen Dec. B182109, March 10, 1975, 75-1 CPD 91 142).

If all possible change areas and uncertainties can be identified and a reasonable "fixed" amount provided for each contingency, then move along the path marked "yes" to the consideration of total cost/price for the entire contract in DB 23.

If all the change areas and/or uncertainties cannot be identified or considered under "fixed" amounts, move along the path marked "no" to further consideration of those that could not be fixed. All items that can be fixed should be completed before moving on.

22A Can the Reason for Unacceptable Contingencies Be Cured?

Arrival at this decision block marks a minor watershed in the decision process: the change from a firm fixed-price to the idea of a range of prices -- in other words, accepting uncertainty. To gain perspective, it might be valuable to look back at the decisions that have led this far. It has been determined that formal advertising procedures cannot be used in this situation, the reason has been justified, and authority has been given to negotiate. The causes of foreseeable changes have been adjusted or negotiated away, yet it has been determined that there is still a contingency amount that is too high to be acceptable. It is good at this point to re-evaluate previous assumptions. Even an emergency situation should be evaluated as a contingency. Short of immediate danger to life, there is always some limit on the contingency amount which should be paid.

Normally, there is a choice of options. Since construction usually occurs after a relatively long time and after much thought and planning, it is justifiable to look twice at the reason for uncertainty at this late date. Possibly some small detail could be separated or accommodated in some way that would allow the rest of the contract to proceed; it is not in the Government's best interest to allow some small detail to move an entire contract to a less desirable type of arrangement. Since this is negotiation, a wide variety of methods are available -- indeed, the limits are set mostly by the resourcefulness of the negotiators. If a problem can be cured, follow the path marked "yes" to further consideration of cost/price.

Causes of unacceptable contingencies at this point could be, for example: (1) the performance of the final product is in question such that no contractor would want to assume responsibility for its performance, or (2) some critical facts which will materially affect the finished product or the method by which it must be accomplished are not yet known. There are, of course, other circumstances which would justify a "no" decision at this point. However, under no circumstances should one follow the "no" path past this decision block without knowing the exact cause, nature, and extent of the problem.

22B Re-Evaluate Contingencies Within a Range

Up to this point, contingencies have been evaluated in terms of a fixed price (DBs 7 and 22). Since that has proved unworkable, thought should now be given to how large a cost/price range would be necessary to include the possibilities. If this range can be determined, it may allow the determination of a cost/price range that would permit some form of fixed-price contract. This is a desirable result, although it should not be gained by forcing the decision.

If a contract decision were based on the evaluation of contingencies alone, then this decision block and the next (DB 22C) would be the deciding point between some type of fixed-price contract and a cost-type contract. The fact that a large range of possibilities is being evaluated should not in itself cause a decision to go to cost-type contracts (ICG, p. 8). If the range of possibilities can be determined, then the corresponding cost/price range can probably also be determined, thereby allowing a fixed-price contract. This again is a subjective decision which must be based on a complete knowledge of the situation. In one situation, an amount of \$1000 might be acceptable for a given contingency; in another situation that amount might be obviously impractical.

If the inability to establish a range for a particular contingency is based on factors other than product performance uncertainty or undetermined conditions (both discussed in DB 22), a serious investigation is in order. ("Technical uncertainties are far more significant than cost uncertainties in the selection of contract type." ICG, p. 8.) If *all* contingencies are satisfactorily accounted for within a range, then move along the "yes" path to the evaluation of cost/price in DB 28. If not, further consideration of contingencies is given along the path marked "no," in DB 22C.

22C Evaluate Contingencies for First Portion Only

In this case, all the discussion of DB 22B applies -- but only to the first portion of the contract. Conditions for a "yes" decision here would include such circumstances as below-grade construction where the exact facts will not be known until the work has started. After the initial work is completed, sufficient facts will be available to negotiate some type of firm contract for the remainder of the work. As many pertinent details as possible should be negotiated prior to start of work, and some limits on dollar amounts and time should be agreed upon for the uncertain work. This process can be thought of as determining a range for the first portion of work where a large number of options are available after that first portion is completed, and selection depends on what is accomplished or discovered during the first portion.

This situation should seldom arise on a construction project, but when it does occur, the information needed to properly evaluate a firm contract should be well described. A "no" decision should be made if there is any doubt that all the facts necessary for some type of fixed-price contract will be known after the first portion of work. In extremely rare circumstances -- and if the situation is well understood by all concerned -- this process might be extended to more than one portion of work. The objectives and limits of each portion must be clearly delineated before work is begun, however, and *it must be apparent that more information will be available later that will clarify the situation.*

If the range of contingencies is such that the amount of money involved is too high even for the first portion of the contract, there is no certainty that further information will be available, or it is not certain that the additional information will clarify the situation, then there is no alternative but to go on to the consideration of cost-type contracts by following the "no" path.

23 Is It Possible to Determine a Firm-Fixed Cost/Price?

Decision blocks 21 and 22 have provided a thorough analysis of the situation with respect to changes and contingencies. Now the crucial question is, "Can we put a firm price on that package that will be fair to everyone?" One danger in this situation is well stated in the ASPM No. 1, p. 14: "If you push too hard on 'should cost,' you can get hung up on the ideal and be trying for a price that would spell loss unless every single good thing that had to happen did happen." The same can be said for contract type. It is desirable to remain with the firm fixed-price type if *practical*, but as stated at the beginning of the negotiation section, contract type is now one of the variables. A firm fixed-price contract is still the most desirable if facts permit, but it is more important to select the type of contract that fits the facts than to select the "preferred" contract type. Again from ASPM No. 1, "Sound procurement requires use of the right contract type. The best, most realistic and reasonable price in the world (for the particular requirement at hand) may turn sour if the contract type is wrong."

The entire question depends on what is a "reasonable" amount to pay for the total contingencies included for the risks that the contractor is accepting. Risk was discussed and references were given in DB 7; the particular aspect under consideration here is the basic information necessary as background for the negotiation procedures. Once this information is at hand, the question of motivation can be addressed in a later DB. By evaluating contingencies individually (DB 22) and now their combined effect, it should be possible later to negotiate an agreement which adequately describes the risk sharing arrangement. It would be detrimental to the procurement effort to erroneously decide

that a total price can be "fixed" and then have to compensate by including a large profit to provide motivation.

Another point is that a price can be considered "fixed" and the contract still include economic adjustments for resources which are subject to large or unexpected price fluctuations. Economic adjustments will be added after the negotiation of cost/price; however, the negotiations should consider that fact and not include contingencies for resources.

Still another way of handling variation without sacrificing the fixed price is with unit costs. "Lump sum" vs "unit price" considerations are discussed in DAR 18-201. Although the discussion is presented under formal advertising procedures, the same principles apply to negotiated contracts.

In summary, if a "fair and reasonable" fixed cost/price can be established for this contract, follow the path marked "yes" to the negotiation stage, where cost will be matched with profit and motivation discussed. Remember that "fixed" cost/price is exclusive of possible variations which are provided for by unit price techniques or for resource variation by economic adjustments.

If the cost/price cannot be determined with sufficient accuracy to consider it fixed, or if it includes unacceptable contingency amounts, move along the path marked "no" to the consideration of cost/price in a range.

24 Are Incentives Needed?

At this point uncertainty has been defined and evaluated as a contingency, and all contingencies have been combined and assigned as risk. The cost/pricing information still indicated that a firm price can be established for the entire contract (with the exception of economic adjustments for resources, which are considered later). Now it is time to look at the conditions and ask if a potential contractor needs incentives beyond the profit included in his proposal in order to accomplish goals which the Government considers important. In a normal situation the answer will be "no." However, it is important that the terms of the contract reflect the measures necessary to obtain the desired results. Many times goals that are highly desirable from the Government's viewpoint are not important to the contractor because they will not affect his profit. Such goals might be the early completion of a particular building, avoidance of closing a street, or better performance of a product. Any prudent contractor will always *optimize* his effort considering the reward involved. If these goals are not clearly stated in the contract and proper incentive provided for their accomplishment, they might not be realized.

The purpose of this DB is not to structure the incentives, only to determine if incentives are required. References will be given later which detail the procedures for structuring various incentives. A "no" answer for the DB means all Government-required goals have proper motivation, either in the contract requirements or in the overall profit to be earned. One warning: it is possible to provide a goal as a contract requirement for which the contractor will include a large contingency amount. Do not add goals or requirements at this point which were not properly evaluated in the contingency definition and costing procedures (DBs 22 and 23).

If some type of incentive is required, or if incentive should be tied to a particular item in addition to overall profit, follow the path marked "yes" to further consideration of the nature and amount required.

25 Are Economic Adjustments Required?

Economic adjustments are designed to remove the risk of "unusual" resource price changes from the contractor (see Category 2 risk in DB 7). They can be used with any contract type, but their most common use is to enable fixed-price contracts when resource considerations might cause the use of less desirable contract types.

The main consideration in economic adjustments is that there be an index on which to base the adjustments which is realistic, reliable, and beyond the control or influence of the contractor. The techniques are discussed in DAR 3-404.3.

The choices available in this decision block serve to distinguish firm fixed-price contracts from those which have economic adjustments. If adjustments are not needed, follow the path marked "no" to the final consideration of the entire contract in DB 26. If adjustments are needed, they should be determined in accordance with DAR and the path marked "yes" followed. This would be a good time to make sure there are no contingencies included in the cost/price for factors covered under the economic adjustments.

26 Will There Be Adequate Time and Competition?

This item is more important under negotiation procedures than under formal advertising; the negotiation method allows competition on factors other than the final price. This opens many options in the methods or materials which can be considered and allows consideration of a wider range of opinions/expertise than under the strict confines of formal advertising. The time requirement thus becomes more important since both the contractors and the Government have to evaluate more information and make more difficult choices during that evaluation.

Sole source is an alternative to competition, but should be considered a poor second choice to be used only if no other option is available. It is contrary to the spirit as well as the express intent of both the statutes and the regulations. Its use for construction projects is so limited that it will not be discussed here. Further references can be found in ECI 3-102(e)(2) and DAR 3-101(d).

Assuming that adequate time is allowed for all parties to accomplish their tasks, the question of competition remains. Since negotiation allows direct discussion with potential contractors (DAR 3-805.3), there is no excuse for lack of competition because the requirements or intent of the plans and specifications is misunderstood. If the contingencies and risk assumption were properly analyzed in DBs 21 and 22 and the degree to which cost/price can be determined was reasonably analyzed in DBs 23 or 28 or 28A, then the fault must lie in the determination of incentives. Some of the places where this decision block occurs have only two exit paths, marked "yes" and "no." In these places, if it is determined that there is or will be adequate competition, follow the path marked "yes"; if not, follow the path marked "no." In other places there is also a path marked "no, final." In those cases the path marked "no" forms a loop which re-examines the determination of incentives. One or more passes through that same loop might be necessary. When it is determined that this re-examination will not solve the lack of competition, follow the path marked "no, final" to further consideration of other contract types. One warning: it would probably not be in the Government's best interest if excessive incentives were used to avoid the "no, final" paths.

26A Firm Fixed-Price Contract Awarded by Negotiation

The decisions which led to this point have excluded formal advertising and required negotiation. Although trade-offs are possible and the final contract type should be adjusted to fit both the situation and the agreement reached during negotiations, it appears that a firm fixed-price contract should be usable in this situation. A brief description of this contract type along with further references for its use is in Chapter 3.

26B Firm Fixed-Price Contract With Economic Adjustments, Awarded by Negotiation

The decisions which led to this point have excluded formal advertising and required negotiation. Although trade-offs during negotiation are possible, it appears that a firm fixed-price contract with economic adjustments to allow for uncertainty in some resource prices will be suitable for the situation. The firm fixed-price contract is discussed and further references for its use are given in Chapter 3. Economic adjustments are also covered in Chapter 3.

26C Firm Fixed-Price Incentive Contract Awarded by Negotiation

The decisions which led to this point have excluded formal advertising and required negotiation. In the immediate situation it appears that the requirements for a firm price are present, but that additional incentives are necessary. The firm fixed-price contract is described in Chapter 3, as are incentives. Further references are given for these subjects.

26D Fixed Price, Successive Incentive, Awarded by Negotiation

Same references as 26C.

27 Will an Award Fee Provide the Desired Motivation?

At this point a firm fixed-price has been determined, but for some reason it does not provide sufficient motivation for the desired goals. It would be good if this could be cured by an award fee which would allow staying with the firm fixed-price type of contract. This would not be a "pure" firm fixed-price contract, but, as discussed in DB 21, the prime consideration under the negotiation method is that the agreement reached be in the best interests of the Government.

Basically, award fees are for situations where there are no clear, measurable criteria on which to base incentives. The fee will be determined unilaterally by the Government based on criteria furnished to the contractor. The setting up and administration of award fees is discussed in the Cost Plus Award Fee Handbook (4) and in DAR 3-405(h). Some of that discussion concerns cost-type contracts, but the principles used for award fees are the same no matter what type of contract is used.

If an award fee would solve the problem, determine this fee as described in the references and then continue on the path marked "yes" to final considerations for the firm fixed-price contract.

However, if the necessary motivation involves extensive incentive provisions or if the incentive can be based on measurable, quantifiable, objective criteria, it would probably be better to move along the path marked "no" to the consideration of incentive contracts. Remember that the prime objective is to fit the contract to the specific circumstances of this procurement, not to fit it to any particular "type" of contract. The final contract must meet two tests: (1) it must provide a "fair and reasonable" price (DAR 3-801.1) and (2) it must promote "the best interests of the Government" (ASPM No. 1, p. 2-2).

28 Can a Cost Target, Range, and Ceiling Be Established?

Previous DBs have established that no form of *firm* fixed-price contract is suitable for the situation. This decision block will determine (1) if there is sufficient information to establish a target cost, for which there is an equal *probability* of underrun or overrun, (2) the extent or range of possible underruns and overruns, and (3) the maximum cost or ceiling that might be expected. These factors will be discussed after some general remarks.

This step involves an attempt to find some basis for the evaluation of alternatives. In estimating "cost," the Government is gathering facts upon which to determine the basic cost of the procurement without inclusion of contractor profit. When "costs" can be estimated accurately enough to allow a target, range, and maximum to be established, the next consideration will be to negotiate with potential contractors in order to establish profits or incentives. The "costs" determined in this decision block will form the basis for the "price" that will be determined in the next block. (Cost/price is discussed in DAR 3-807.2 and ASPM No. 1, p. 1-3).

Now back to the determination of target cost. Note the emphasis on *probability* of underrun or overrun. This does not necessarily mean an equal amount of underrun or overrun is involved. For example, assume that only one factor involved in the uncertainty requires a range of costs rather than a firm fixed cost. If this factor goes one way, it may cause \$40,000 additional costs; if it goes the other way, it may save only \$5,000. Assuming that there is a 50-50 chance for either occurrence, these two figures represent the range for this situation.

Another consideration is the amount of the range. The fact that the range is large is not sufficient reason to go to cost-type contracts if the situation is well defined and understood. Conversely, the concept of a cost range should not be used to cover up uncertainty that has not been properly evaluated as a contingency and had the risk assigned.

The last factor is the maximum cost or ceiling. This will be an important item in the negotiation, because it is at this point that the contract becomes a firm-fixed-price type with the contractor having full responsibility for further costs. If the target and range have been established based on properly evaluated contingencies, the maximum cost should be realistic. In this case, the path marked "yes" should be followed to the actual negotiation of a "price" target, range, and ceiling, along with whatever other motivation is necessary to assure competition and achievement of the Government's goals. If a realistic maximum cannot be established, there is no basis to discuss "price" and consideration must move through the path marked "no."

28A Establish Target, Range, and Ceiling for First Portion

This is the consideration discussed in DB 28, modified to consider only the first portion of the work. The most obvious application of this capability is when some fact will become known only after the work starts. As in DB 28, it is extremely important that the missing information be clearly defined and that there be alternatives in case things do not work as planned. Obviously, any costs which are not affected should be analyzed under DB 28.

If the requirements of DB 28 are met with the exception of some clearly defined area as explained above, then a successive target incentive contract may be appropriate and consideration should continue along the path marked "yes." If these conditions are not met, the consideration must shift to cost contracts along the path marked "no." This particular decision should not be "forced" to avoid cost-type contracts. Even though cost-type contracts are less desirable than fixed price, it would be a false economy to enter into a successive target contract and later find that the information necessary to conclude or change it to a more desirable type was not available. This can be avoided only by realistically analyzing the situation and defining all possible results.

29 Determine Incentives and Economic Adjustments

This is the point at which all the information available is combined to produce the final contract package. For a prospective contract, this is the time to examine the package to be sure that it is complete and to determine the incentives that will motivate a potential contractor to accomplish the important objectives. For a final contract type determination during the actual negotiations, this is where the negotiations occur. Trade-offs may be made during negotiations which will require re-evaluation of previous decisions or even a change in the contract type which was previously considered appropriate. Remember that the contractor is a party to the contract and that any contract implies and demands *agreement* among the parties. Selecting a contract type that will satisfy the contractor who gets the award is one more factor which must be considered in selecting the "proper" contract type.

Because of the complicated nature of incentive contracting, this guide will not attempt to explain all details. The following is a *minimum* reading list for anyone involved in determining incentives. It begins with general comments on motivation and continues to more detailed consideration of various types of incentives. Much of the discussion of incentives also mentions cost contracting, since the incentive theory and approach is equally appropriate for either fixed-price or cost contracts.

Minimum Reading List

NASA Cost Plus Award Fee Contracting Guide, Appendix A.

DAR Manual for Contract Pricing, P. 2-20, "The Incentive Approach."

Incentive Contracting Guide, "Chapter II, Incentive Contract Negotiation"; Chapter III, "Cost Incentives"; Chapter IV, "Multiple Incentive Contracts"; and Chapter V, "Schedule Incentives."

DAR, Section III, Part 4, (3-404.3) for structuring economic adjustments (3-405.5h) for structuring award fees.

DAR, Section III, Part 8, "Price Negotiation Policies and Techniques."

One point discussed in the references deserves reinforcement. Motivating a contractor to accomplish specific goals is a complex, often misunderstood process that requires the full range of "tools" available. These tools include profit, performance and schedule incentives, and award fees. The negotiation method permits tailoring these tools to the immediate situation; this opportunity should not be missed because of preconceived decisions or "traditional" methods.

After a contract package (or proposed package) is determined in this DB, move on to the evaluation of that package in DB 26. The variable nature of all factors under the negotiation method may require several iterations of this procedure or even a return to more basic decisions in order to prepare the best contract package for this situation.

[29A] Incentives and Economic Adjustments for First Portion

All the considerations listed in DB 29 apply here -- but only to the first portion of the work. This strategy is used in those rare situations where some factor which will affect the final portions of the work is not known at the beginning and its effect cannot be estimated even within a range. For this technique to work, it is important that two criteria be strictly adhered to:

1. The additional information needed to enable the final negotiation of a firm contract must be clearly defined.

2. Provision must be made for all possibilities; that is, limits must be set to show what each party agrees to do for each possibility.

All factors and provisions that can be fixed or agreed to should be included in the fixed portion of the initial agreement.

[30] Adjustments for Cost-Type Contracts

The fact that this point has been reached for a construction contract means that unusual circumstances are involved which should be examined very closely before proceeding. A great danger is that the uncertainty which has caused consideration of cost-type contracts results from indecision rather than lack of facts. In view of the relatively unlimited opportunity for rising costs, this situation is not in the Government's best interest.

This is a cost-reimbursement contract which provides for payment to the contractor for allowable costs incurred in the performance of the contract, to the extent prescribed in the contract. This type of contract is suitable for use only when the uncertainties involved in contract performance are of such magnitude that cost of performance cannot be estimated with sufficient reasonableness to permit use of any type of fixed-price contract. Nevertheless, an estimate of total cost must be established for the purpose of (a) obligation of funds, and (b) setting a ceiling which the contractor may not exceed (except at his own risk) without approval of the contracting officer. This places more responsibility on all of the Government's actions, from cost estimates to daily decisions. The Government takes a large amount of the risk (typically 75 to 100 percent) and also accepts almost total responsibility for results and sometimes for the methods used to obtain those results. This is a much different role than under fixed-price contracts.

Cost-type contracts do have an advantage over other types when it comes to changes, however, especially in quality or quantity of materials. Since the contractor is not committed to a fixed price or even a range of prices, he has no objection to substitution of materials or even to changes in design that would completely disrupt a fixed-price contract. A major disadvantage is that he also has no incentive to use materials efficiently, which places greater burden on the Government's field supervision. For this reason, incentive and award fee contracts are preferred over cost-plus-fixed-fee contracts.

One more point concerning uncertainty in results or performance: at some time during the contract, facts should become available that enable the parties to negotiate a fixed-price contract for the remainder of the work. This negotiation should be accomplished as soon as possible and should be provided for in the initial specifications.

The increased Government responsibility for methods and objectives requires much more internal expertise and cooperation for cost contracts than for fixed-price contracts. The contractor must follow accounting standards, but these are of no use unless Government personnel have access to "real time" information and have accurate estimates and projections with which to compare results. Increased cooperation is needed

between the various Government divisions, branches, and offices to insure that all of this information is available when needed and that continuing, effective, knowledgeable control is exercised. Otherwise costs can become unreasonable very quickly.

Emphasis must shift away from estimated costs in the decision for award. Both the Comptroller General (Dec. B 171367(1) Sep 22, 1971) and the DAR (3-803(c)) recognize that, under cost-type contracting, cost is not the controlling factor in determining which proposal is most advantageous to the Government. Because of the cost uncertainty and the absence of ceiling price in the agreement, primary considerations under this contract type are capability, understanding, and potential performance of the contractor. The award will be made to the contractor who can perform the contract in a manner most advantageous to the Government, considering price and other factors. In the case of cost contracts, "other factors" will probably be more important.

31 Examine Staff

The requirements of cost-type contracting are such that a large responsibility falls on all levels of personnel within the Corps organization. For example, under fixed-price contracts, a contractor will apply his maximum expertise to problems which will potentially increase expenses and decrease profits. Under these conditions a Government decision which he considers inefficient or which takes too long will result in his immediate attention. Under cost-plus conditions he is less likely to take action, since he has no direct responsibility for the costs incurred as a result of the delay or inefficiency.

The contractor's records and procedures must be examined before, during, and after negotiation to ensure they are set up to certain standards. Typically, contractor personnel are required to meet certain qualifications and the contractor is required to have someone with contractual authority on the site at all times. Under cost contracts many of the problems and considerations commonly handled by the contractor become a Government responsibility. It is in the Government's best interest that this same level of qualification, preparedness, and efficiency be provided within the Corps organization.

If the Government staff and all internal circumstances are adequate for cost-type contracts, follow the path marked "yes." In some cases these conditions cannot be met because of lack of manpower or expertise, or the time limitation might not be critical enough to justify the extra administrative work and risks associated with a cost-type contract. If this is the situation, follow the "no" path to DB 16 and further time availability analysis.

Although uncertainties which caused the consideration of cost-type contracts will probably not allow plans and specifications of any kind to be as definitive as for other types of contracts, the scope of work should be well defined. In addition to the scope of work that is expected, certain limits must be agreed upon. Since the negotiation method is being used, these limits should be worked out if the subject of the procurement is firm enough to allow contracting. If agreement cannot be reached on all the items mentioned below, the subject of procurement is probably not defined well enough for a construction contract and consideration should shift to research and development (R&D) or to further design.

The scope of the work involves what is to be accomplished, methods which might be used, equipment which might be necessary, and similar considerations. It is important that the Government use the freedom of discussion provided by the negotiation method to ensure that the selected contractor has all the required qualities and capabilities. Further, it is necessary that the contractor and Government agree on all methods, capabilities, equipment, and expertise which might be used. This is not to say there must be agreement on minute details of the operation, but on the general nature of the operation. For example, if it is not known which of two methods might prove best to accomplish some item of work, the contractor should be capable of performing either method.

Limits are also important considerations during the negotiations. Beside the obvious question of maximum and minimum fees or incentives or criteria for awards, other important items include limits on the amount of effort which will be required; i.e.: Will around-the-clock work be a possibility? Will winter shutdowns be allowed? Will the work be continuous or interrupted? At what point will the contract be converted to fixed price and what additional information will start this conversion? What are the various possibilities if things do not go as planned or expected results do not materialize? The initial contract must document *agreement* on each of the items that may later become important.

If the scope and appropriate limits can be defined, continue along the path marked "yes." If there is uncertainty in the scope of the work or if it is not certain what level of effort will be involved or to what extent some other important parameter might be required, follow the path marked "no" to consideration under R&D or to further design.

32A Further Design or Research and Development

In arriving at this decision point, it has been determined that the scope and limits of effort of other parameters required for this contract are poorly defined, if at all. This is an extremely unusual situation for a construction contract. If the selection process has gone this far, some work must be required, but it would probably be more accurately categorized as research and development rather than construction. Unless there are overriding reasons that are well understood, it would be best to proceed under the research and development category rather than continue with construction contracts. The same type of contract may well be required under R&D criteria, but since the regulations are different, the situation should be examined according to the regulations appropriate for R&D (ICG, p. 57). In some cases, it might be sufficient to complete more design effort. In that case the entire contract selection process should begin again after the design work is completed. In either case, it appears impractical to continue in the selection process for construction contracts at this time.

33 Can Target Costs Be Determined?

Even with the Government accepting almost all of the risk, there is still a pressing need for target costs, especially if cost and some types of performance incentives are to be used. Target costs are equally important for control of the project costs since the contractor, once awarded the contract, has little incentive to control costs and the Government will have to pay allowable costs which are incurred within the terms of the agreement. Control of this type requires up-to-date and reliable projections against which to compare progress. Further references which discuss this subject in detail are under the following words in the subject index:

Cost/pricing
Target cost/price

The decision required here is whether the goals of the contract as reflected in the cost are sufficiently defined that a target can be established against which to judge contractor's cost performance for the purpose of determining incentives. The same purpose is served if the incentives can be based on criteria which are not cost dependent, as in schedule incentives. If either of these situations exists, follow the path marked "yes" to the negotiation stage where proper motivation will be determined. If the situation does not meet one of these criteria, move along the path marked "no." This move would be unusual for a construction contract since it means that only a broad scope of work is known and that costs cannot be determined, even within a wide range. That situation will be examined further in DB 36 before proceeding to the last -- and least desirable -- contract type, cost plus fixed fee.

34 Determine Incentives and Awards

The procedures for determining incentives and awards are the same here as discussed in DB 29, except that economic adjustments are no longer applicable. The incentives and awards should be tailored as closely as possible to those used in fixed-price contracts, since any cost-plus contract should be converted back to fixed price at the first opportunity. This factor must be considered in determining incentives and awards so that the conversion does not penalize a contractor. The conditions and as many terms as possible for that conversion should also be included.

There is no distinction in principle between incentive and award contracts; both are discussed in detail in the *Incentive Contracting Guide*, and in the NASA Handbook, *Cost Plus Award Fee Contracting Guide*. The difference between incentive and award contracts is unimportant as long as the result is a contract which realistically and practically reflects the Government's objectives and provides the contractor fair and reasonable awards for achieving those objectives. Any actual situation will probably require both incentives and awards.

As stated before, the important thing is that the agreement adequately reflect the situation. When incentives and awards have been matched to the contract situation, the result will be evaluated in DB 35, which looks at the entire contract relative to the requirement for competition. During actual negotiations, the path from incentive and award determination to evaluation might have to be traveled several times while the trade-offs and adjustments to the final contract are negotiated. If the negotiations are successful, the type of contract is determined by which of the features predominate; a contract providing mostly incentives would be called a cost-plus-incentive contract even though it also had award provisions.

35 Is There Competition (or Sole Source Authorization)?

Unless a sole source procurement has been justified and authority received, there should be competition for the award. As in the other types of contracts (DBs 9 and 26), if there is no competition, something is probably wrong with the procurement effort. Under negotiation methods -- especially for cost-type contracts -- there should be adequate competition for every well-advertised, well-defined effort. The negotiation discussions sometimes may bring to light new factors that affect the methods or procedures which might be used. In this case, the Government must walk the fine line between allowing all competitors to share all pertinent information and "technological leveling" or "transfer." These situations are discussed in *Federal Procurement Law* and DAR 3-805.3.

The negotiation method offers an immediate remedy if lack of competition appears likely: adjustment to the incentive provisions of the contract. The discussion permitted under negotiation allows the Government to find out how potential competitors feel about certain parts of the contract and can lead to changes to clauses and requirements which will benefit all parties. Although competition can be obtained this way for almost any situation, it should not be used to cover up an unsound procurement effort, but rather to adjust the reward potential to reflect market conditions and the particular situation under consideration.

There are three exit paths from this block. The first is a simple "no" to the question of competition. This leads back to previous blocks for reconsideration. Another, labeled "no, final," is to be followed when the adjustment procedure has been tried and found not to work. This will lead to other alternatives. The final exit is "yes," which is followed when there is adequate competition.

36 Are Goals Firm Enough to Proceed?

The goals of the procurement effort should be examined at this point to determine if they are firm enough to consider a construction contract. Cost-type contracts do not solve basic problems; they only alleviate certain administrative problems involving agreements between two or more parties. The project must still be controlled in a cost-effective way, which might not be possible if the details and requirements are too vague. This, coupled with the fact that the Government is almost completely responsible for all risks under this type contract, makes a thorough analysis mandatory here.

The analysis should take a form similar to that in DB 4. A time/value decision must be made as to whether it is better to accept the uncertainty of effective cost management or to accept a delay while further development or design is completed or additional information obtained. Only in an emergency should the decision be to continue with the procurement.

If the decision is to wait for more information, additional design, or further research and development, the path marked "no" effectively ends the consideration of contract type and returns consideration to basic factors which affect the situation. In some situations where the decision leads to research and development, this same contract type might still be selected, although it would have to be justified under the procedures for research and development.

If the decision is to continue with the procurement, follow the path marked "yes."

37 Alert Cost-Plus-Fixed-Fee Team

It is apparent at this point that any contractual agreement will be of the cost-plus-fixed-fee type, which places almost total responsibility on the Government for the Category 2 and 3 risks defined in DB 7. Under some conditions, risks which would be considered Category 1, and therefore the responsibility of the contractor, are also assumed by the Government. Since there will be no ceiling price and the contractor has little motivation to perform efficiently, it is apparent that this type of contract offers maximum opportunity for cost overruns.

Since this situation requires the best expertise available to keep control of the project, OCE has established a team with cost-contracting experience to assist offices in establishing the terms and conditions before negotiation and to act in an advisory capacity during the negotiation and administration. The procedures are given in ECI 3-405.7.

38 Preparation and Successful Negotiation of Cost-Plus-Fixed-Fee

The procedures for this negotiation are discussed in AR 415-1, and will not be repeated here. If a contract is not successfully negotiated in accordance with AR 415-1, then there is no alternative but to follow the path marked "no." This leads to further research and development or additional design.

38A Cost-Plus-Fixed-Fee Contract, Awarded by Negotiation

The circumstances leading to this point have excluded formal advertising as well as the more desirable types of negotiated contracts. The remaining choice is cost plus fixed fee. This contract type and references for its use are given in Chapter 3.

39 Are Incentives or Awards Predominant?

This question is somewhat academic since awards are only a special type of incentive. However, this distinction does give some indication as to the nature of the contract. Incentives are always based on objective, measurable information. Awards, on the other hand, are for those situations where a subjective, informed judgment will be used to determine the amount of the award fee which has been earned.

If this contract consists predominantly of award-type incentives, follow the path marked "A" to the description and references for cost-plus-award-fee contracts. If incentives predominate, follow the path marked "I" to similar information for incentive contracts. A contract

might have both award and incentive features; the important thing is that the proper incentive arrangement is used to fit the situation at hand, not that a contract consists entirely of one or the other. The final test of a negotiated procurement is that the contract fits the "best interests of the Government."

39A Cost-Plus-Incentive-Fee Contract, Awarded by Negotiation

The circumstances leading to this point have excluded formal advertising and required negotiation. Further, it appears that uncertainty has prevented establishing firm costs on which to base a fixed-price contract, but that the addition of incentives might overcome some of the negative aspects of the cost-type contracts. Cost-type contracts and incentives are discussed and further references given in Chapter 3.

39B Cost-Plus-Award-Fee Contract, Awarded by Negotiation

The circumstances leading to this point have excluded formal advertising and required negotiation. Uncertainty has prevented establishing firm costs on which to base some type of fixed-price contract, and the subjective nature of criteria available to evaluate the contractor's performance will probably require award fee features. Cost-type contracts and award fees are defined and references given in Chapter 3.

5 EXAMPLES OF CONTRACT TYPE SELECTION PROCESS

Example 1

Assume that those responsible for planning and managing the District's resources have reviewed a proposed project and decided on an initial procurement strategy. That decision was to produce detailed plans and specifications, and tentatively proceed on the assumption that the form of procurement would be one formally advertised project, culminating in the award of one firm fixed-price contract. For this strategy to be reasonable, those persons had to formally or informally answer all the questions represented by the flowchart decision block (DB) sequence 1, 5, 6, 7, 8, and 9, terminating in result 9A. Of course the initial judgments and decisions were based on information available at the time they were made, so developments during the design phase might introduce reasons for changing the type of procurement.

The target date for advertising the project is now approaching. With the preparation of plans and specifications in the final stage, the initial procurement decisions must be verified or refuted based on current information. This process requires starting through the previously selected DB sequence to determine if the answers still lead to result 9A (firm fixed-price contract).

DB1

It is almost certain that the answer here will be "yes." After all, development of the plans and specifications is almost complete, and any insurmountable obstacles would have already surfaced.

DB5

It must not be assumed that an "OK" answer is justified here merely because plans and specifications are available. The firm fixed-price contract demands complete, accurate, clear, and workable plans and specifications. It is a matter of record that plans and specifications containing errors, ambiguities, and/or omissions generate excessive costs to the Government -- not to mention contract completion delays, increased administrative costs, and user dissatisfaction. The time and effort expended in developing high-quality plans and specifications before the project is advertised is well invested from any point of view. The Government should have the expertise to put its desires on paper in a way that will allow a bidder to prepare an intelligent bid without the need for large contingency amounts. If the Government is uncertain of its needs, then the firm fixed-price contract is inappropriate; other contract types are available for just such circumstances. For this example, it is assumed that the plans and

specifications have been carefully developed, including comprehensive site investigation, and subjected to a thorough "constructibility" review by personnel experienced in the type of construction involved. Thus, the answer here is "OK."

DB6

The object of this DB is to analyze the project for any benefits to be derived from dividing it into several procurement actions instead of one. There are two basic questions to answer: (1) is the project such that dividing it into units is reasonable and practical, and (2) if separate units are practical, would multiple contracts be of sufficient benefit to the Government. If the answer to (1) is "no," then (2) becomes irrelevant, and consideration moves immediately to DB 8. However in many cases the answer will be "yes, it *can* be split up." Then the question is if it is in the Government's interest to do so. For instance, on a very large project competition will be limited to only a few contractors, while dividing it into smaller units would enable a larger number of contractors to compete. If the project involves work at several sites, better bids may result from small, local contractors than from one large contractor. Also, the nature of the work may make it advantageous for the Government to solicit the bids of specialty contractors for significant phases of a large project. However, administrative costs or capabilities may preclude the use of smaller contracts. The general circumstances prevailing within the Government along with the nature of the project will influence the final decision reached.

Perhaps the project size, character, and location are ideal to advertise for a firm fixed-price contract, but there is doubt that adequate funds are available to obtain the entire work. Such a situation would call for exploring the possibility of using a bid price schedule composed of a base bid and additive alternates.

In this example, a thorough study of the current situation has led to the conclusion that it is best for the project to go as a single unit, so the answer to this DB is "no." Consequently, consideration moves to DB 7.

DB7

The question here is essentially, "are the risk assignments clearly defined in the contract documents, and would there be any advantage for the Government to assume more or less risk?" (The three categories of risk are defined in the text beginning on page 29.) Category 1 and 2 risks are normally the responsibility of the contractor, while the Government assumes the Category 3 risks in a firm fixed-price contract. In this DB one examines the possibility that the *normal* arrangement may not be the best for this particular project. It has already been verified

in DB 5 that the plans and specifications are "high quality"; therefore, risk assignments are clearly defined, and such factors as construction time, materials specifications, and workmanship standards are explicit. A prudent bidder can thus price the job with confidence, including only essential contingency amounts. Nevertheless, under certain circumstances, the Government may find it economically justified to assume some Category 2 risks rather than pay the contractor for assuming them. Such a determination requires a thorough knowledge of the project plans and specifications, the construction operations involved, job site conditions at the time the work will be taking place, and anticipated economic/market conditions during the construction period. For instance, if some of the materials required would present procurement uncertainties to the contractor, he must cover such possibilities with contingency amounts, whereas the Government might theoretically reduce the overall project cost by furnishing these materials.

Many other circumstances (unique for each project) may warrant other than normal allocation of risks. The point is that this aspect of the project should be given some thought, in order to remove as much as possible the need for bidders to incorporate contingency amounts in their bids.

In this hypothetical example it is decided that the normal distribution of risks is appropriate, so the answer to DB 7 is "OK," and consideration moves to the next DB.

DB8

"Are economic adjustments needed?" While economic adjustments are available within the scope of a firm fixed-price contract, they are the exception rather than the rule. There are several forms of economic adjustment, but they are all intended to relieve the bidder of the burden of attempting to predict the unpredictable, and to prevent the Government from paying an excessive amount because the contractor's prediction significantly exceeded the actual cost incurred. For example, a project having a long construction duration will be affected by wage and price escalation; the question is how much. Past experience is not necessarily an accurate indication for the future. To be reasonably responsible to his company's best interest, a bidder cannot afford to underestimate the potential increase in material and labor costs. Knowing this, the Government may rightly suspect that the bid price includes contingency amounts to cover the most extreme escalation imaginable. The Government may thus decide to advise all bidders to base their costs on present wage/price indices; actual increases above this standard would then be reimbursed by the Government. The contract clause(s) used to implement economic adjustments must be very explicit in defining what costs apply, what constitutes the base cost index, and what data will be employed to substantiate a change in the base index and possibly establish

a range (plus and minus) through which the base may fluctuate before triggering the provisions of the clause.

The project in this example does not require economic adjustments, so DB 8 is answered with a "no" and that path is followed to DB 9.

DB9

The first part of this DB, "time," was more important during the initial procurement strategy decision when the question was whether the urgency to get the project started was compatible with the time needed to prepare detailed plans and specifications, advertise, permit a reasonable bidding period, and award a firm fixed-price contract. That answer was "yes," and assuming that the Government has proceeded to this point without anything arising to invalidate it, the answer remains "yes."

The second portion of this DB concerns competition -- will this project attract a reasonable number of bidders, and are the plans and specifications clear enough to produce acceptable bids? The package should be examined again to eliminate any unnecessary restrictions which might drive the bids upward. Also look for any requirements which will not actually be enforced; these can cause a contractor to raise his bid, and may even keep him from bidding at all.

The philosophy of encouraging more bidders to foster keener competition and obtain lower bids is basically sound. However, a Government estimate (GE) should be made to verify that the bids received are the product of a competitive environment. The GE must reflect the fair and reasonable price for the construction involved, at the location it is to be built, and for the time frame in which construction will be taking place. Defective GEs, although rare, can cause either of two equally unsatisfactory situations: (1) a high GE can allow acceptance of excessively high bids, or (2) a low GE can cause rejection of bids which are responsive and reasonable.

In arriving at this point on the flowchart, each DB has been answered honestly as it pertains to the present procurement action. After a "yes" answer to DB 9, the path indicates that a firm fixed-price contract is best for this project. This reaffirms the initial procurement strategy made before plans and specifications were started. Since most Corps projects are such that the formally advertised, firm fixed-price type of procurement is best, it is natural to lean in that direction at the time initial procurement decisions are made for a project. However, it is important to remember that the initial decisions are only tentative. They are made early in the project development when all the facts necessary to make a final decision are not yet available. As more knowledge becomes available, initial procurement strategy decisions may

need to be changed to fit new conditions. The flowchart is intended to demonstrate the options available and lead the user to the correct contract type for the particular situation.

Example 2

In this example, suppose that some factor such as available time precludes the use of formal advertising, e.g., as in an emergency situation. Further assume that the proper determinations and findings have been prepared and authority to enter into negotiated procurement has been given (DB 14), leading to DB 21.

This situation in no way relaxes the requirements that prices be fair and reasonable and the maximum amount of competition be encouraged, nor the Government's responsibility to issue clear specifications and/or plans. The latter responsibility begins in DB 21 where the negotiator must become as familiar as possible with the situation in order to evaluate objectively the options available.

DB22

This is the first step in determining the contract type. Can the contingencies of this procurement be defined? For most construction projects this answer will be "yes." It may not be known what will happen, or when, or how, or what effect it will have, but the risks are known and can be defined. Thus DB 23 is the next stop.

DB23

Here is where to ask if a prudent contractor, familiar with all the facts available at this point, could realistically put a firm fixed-price on the procurement which would not include unreasonable contingencies. An example of when this would not be possible is as follows. Assume a bridge is to be replaced under emergency conditions; however, the extent of the damage cannot be determined accurately and therefore availability of materials and time cannot be evaluated. Any "firm" price under these circumstances would be a guess that would probably contain unreasonably high amounts to cover contingencies. In this case the answer to DB 23 must be "no" and consideration must shift to establishing a "target cost" having equal possibility of underrun or overrun. Included in this would be a formula for determining the amount a potential contractor would receive based on what actually happened and how efficiently he held down costs. This complicated procedure is fully explained in the references. Assuming the requirements summarized under DB 28 were met, consideration would shift to economic adjustments (DB 29) and the final determination of competition (DB 26) similar to these considerations under formal advertising procedures. Although potential

profit is now tied to contractor performance and the total cost is not known (except as a ceiling), the considerations of "fair and reasonable" prices and "maximum" competition are still valid. The burden on the Government to provide clear and complete specifications and to select the best one for the circumstances based on an objective evaluation, is more complicated than with detailed plans and firm fixed-price procurements. However, here too, the rewards of diligent, knowledgeable effort to fit the contract type and requirements to the situation will result in a procurement action that is fair and reasonable to all parties.

5 SUMMARY AND RECOMMENDATIONS

This report provides an overview of the construction contract selection process, including a description of the various contract types available and the factors influencing the selection of each type. A flowchart graphically displays the sequence of events and decision points from which the determination of a contract type is derived. The flowchart shows the requirements for using the preferred formally advertised, firm fixed-price contract. When the particular situation prevents use of this contract type, the available options are shown. The flowchart constantly alerts the decision-maker to the direction in which the decisions are leading, allowing him to return to the path leading to the formally advertised contract area or to pursue the steps for obtaining approval for a negotiated contract type.

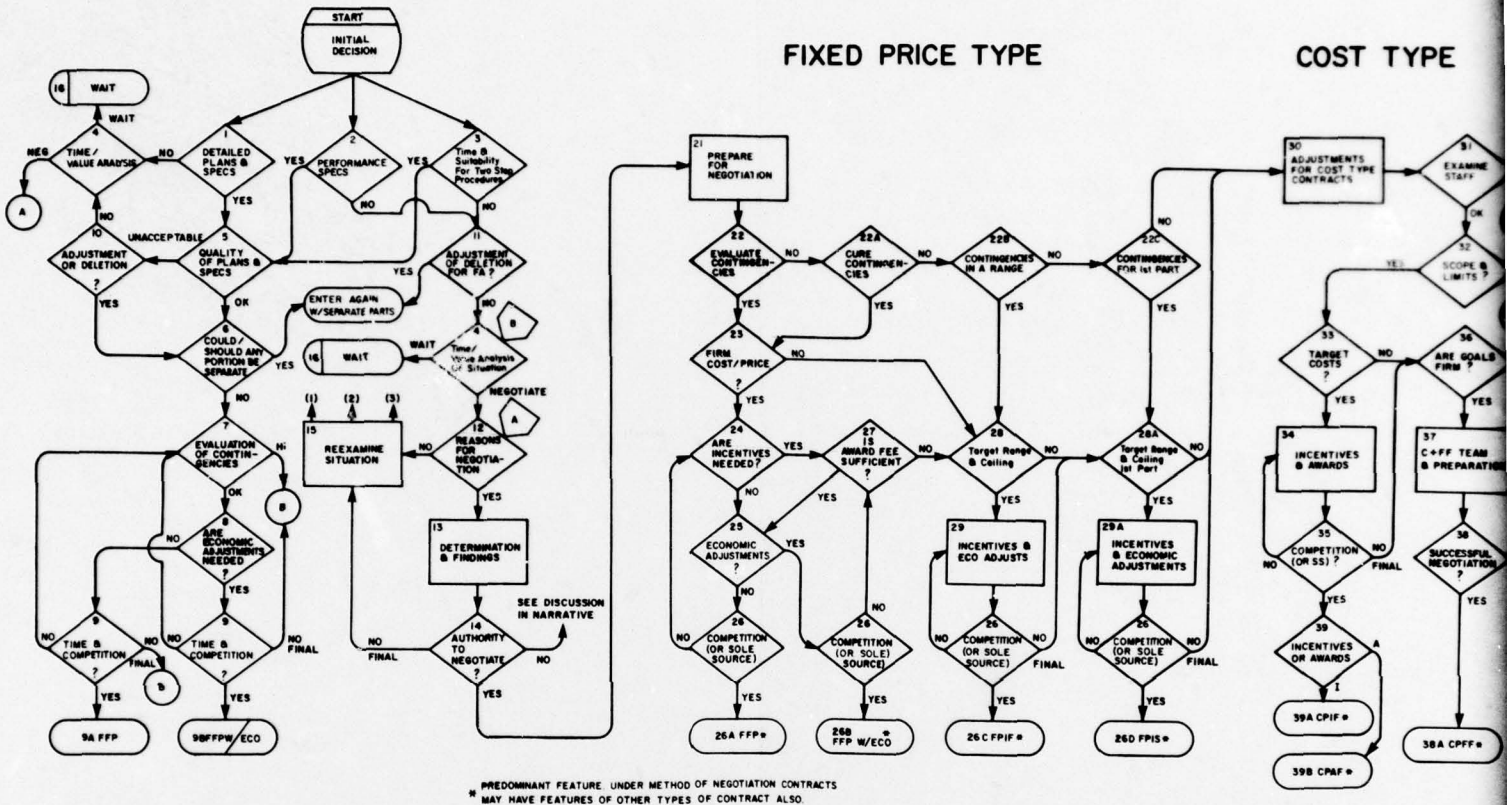
Approximately 1 year after distribution of this report, a follow-up should be performed to determine if it is useful to field personnel. If it is useful, steps should be taken to revise and update the material as required to reflect changes in the governing negotiations upon which it is founded.

FORMAL ADVERTISING

NEGOTIATION

FIXED PRICE TYPE

COST TYPE



* PREDOMINANT FEATURE UNDER METHOD OF NEGOTIATION CONTRACTS
 * MAY HAVE FEATURES OF OTHER TYPES OF CONTRACT ALSO.

Figure 4. Contract selection flowchart.

FORMAL ADVERTISING

NEGOTIATION

FIXED PRICE TYPE

COST TYPE

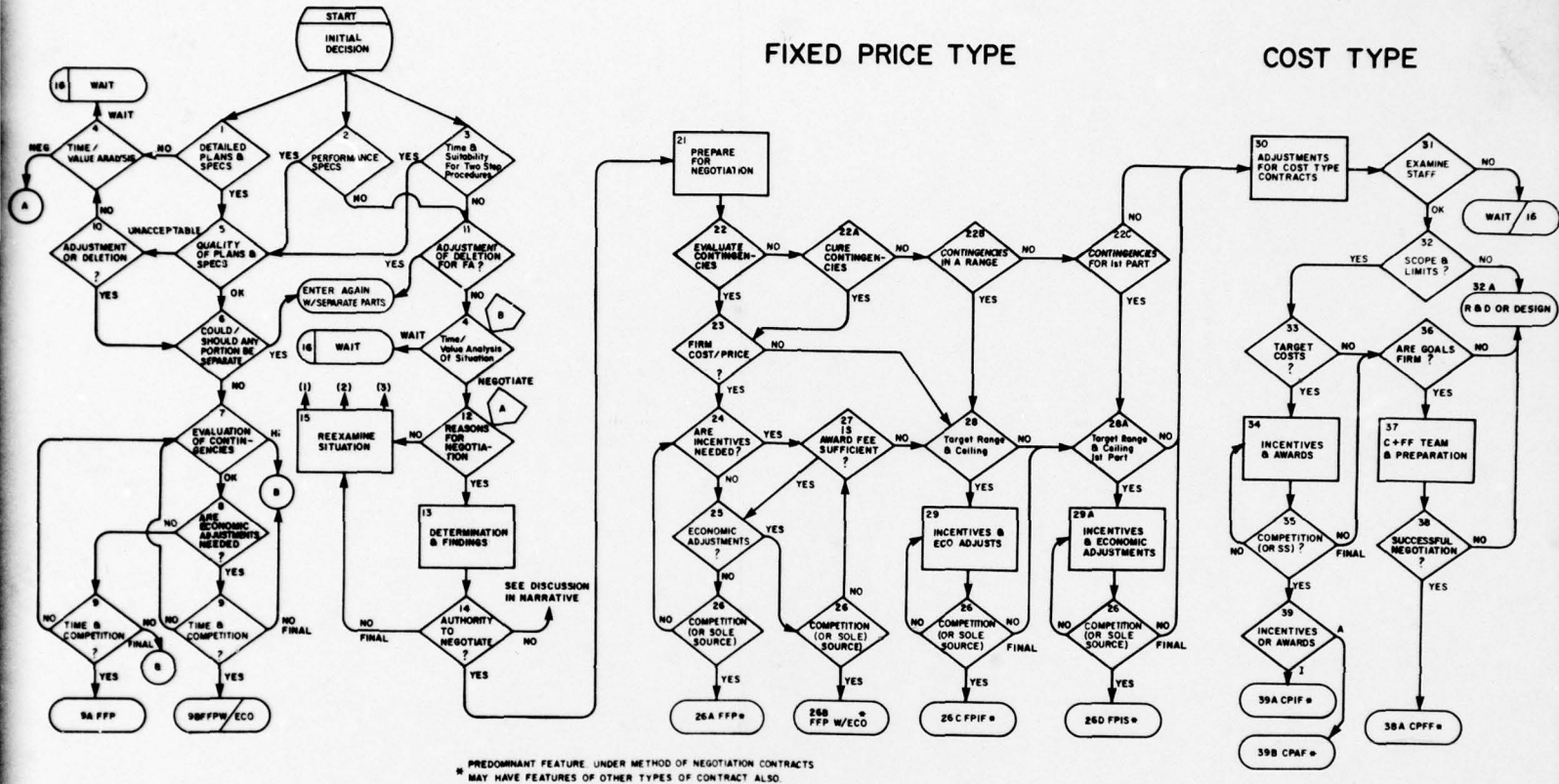


Figure 4. Contract selection flowchart.

BIBLIOGRAPHY

1. AR 415-1, *Report of Negotiated Construction Contracts and Modifications*, RCS Cong. 1051 (18 April 1974).
2. *Armed Services Procurement Regulations (DAR)* (Department of Defense [DOD], 1969).
3. *Construction Contract Negotiating Guide* (U.S. Army Corps of Engineers, Dec 1969).
4. *Cost Plus Award Fee Contracting Guide*, NASA Handbook 5104.4 (National Aeronautics and Space Administration).
5. *Cost Reimbursable Construction Contract Manual*, NAVFAC P-398, Vol 1-4 (Naval Facilities Engineering Command, April 1970 and change August 1970).
6. *DAR Manual for Contract Pricing (ASPM No.1)* (DOD, 1969).
7. *DOD and NASA Incentive Contracting Guide*, Army Field Manual (FM) 38-34 (DOD, 1969).
8. ER 1180-1-1, *Engineer Contract Instructions (ECI)* (Office of the Chief of Engineers [OCE], 1969).
9. ER 1180-1-7, *One Step Competitive Negotiation and Two Step Formal Advertising* (OCE, 1974).
10. Nash and Cibinic, *Federal Procurement Law*, 2nd Edition (The National Law Center Series in Public Law, The George Washington University, 1969).
11. Shnitzer, Paul A., *Government Contract Bidding*, 1st Edition (Federal Publications Government Contract Text, 1976).

APPENDIX: SUBJECT INDEX

<u>Subject</u>	<u>Reference*</u>
Accounting Standards	3-402(5); 3-1200; ASPM#1, p 2-23
Advertising	4-800; ECI 1-1000
Award Fee	See Incentives
Bidding Time	2-202.1
Ceiling Cost/Price	18-110; ASPM#1, p 2-24; ICG, p 75 to 102
Competition	1-300.1; 3-101; 1-1201; 3-604.2; 3-807
Competitive Range	3-805.2
Contingencies	See Risk
Contract-definition	1-201.4
Contract Types Allowed by DAR	3-401; 3-402; ASPM#1, Ch 2; ECI 3-400
Firm Fixed-Price (FFP)	3-401(b)(6); 3-404.2
Firm Fixed-Price w/Economic Adjust	3-404.3
Fixed Price Incentive, Firm (FPIF)	3-404.4(1) & (2); ICG
Fixed Price Incentive, Successive	3-404.4(1) & (3); ICG
Cost Plus Incentive Fee (CPIF)	3-405.4 ICG

* All references are from DAR unless otherwise noted. Designations such as 3-200 refer to Section III, Part 2 of DAR. Abbreviations are as follows with the number in () referring to the bibliography.

ASPM#1 -- DAR Manual for Contract Pricing (6)
 ICG -- Incentive Contracting Guide (7)
 CPA -- Cost Plus Award Fee Contracting Guide (4)
 ECI -- ER 1180-1-1, Engineer Contract Instructions (8)
 FPL -- Federal Procurement Law (10)
 CCNG -- Construction Contract Negotiating Guide (3)

Cost Plus Award Fee (CPAF)	3-405.5; ASPM#1, p 2-29; ICG, Ch IX; CPA
Cost Plus Fixed Fee (CPFF)	3-405.6; 18-112; ECI 3-405.7; AR 415-1, ER 415-345-270
Combinations	3-405.5(h); ASPM#1, p 2-2; CPA; ICG, p 107
Contractual Arrangements	
Letter Contracts	3-408; ECI 3-408
Cost Incentives	See Incentives
Cost/Pricing	3-800; 3-807.2; ASPM#1, Ch 1; CCNG, Ch 3; FPL Ch 19; 18-108; ECI 3-807 to 3-811; ICG, p 53; CCNG, Ch 4 & 5; ER 415-345-42
Principles & Procedures	15-000 ASPM#1; CCNG, Ch 11-7;
Determinations and Findings	3-300; ECI 3-303
Economic Adjustments	2-407.4; 3-404.3; CCNG, Ch 1
Formal Advertising	1-300.2; 18-200; FPL, Ch 7
Policy	2-101; 2-102; ECI 2-100
General Requirements	2-103
Types of Contracts Allowed	2-104; 18-201
Contract Forms	16-401
Solicitation of Bids	2-200; 18-202 to 206; ECI 2-200
Submission of Bids	2-300; ECI 2-300
Opening of Bids and Award	2-400; 18-207; 18-210; ECI 2-400
Responsibility	2-407.2; ECI 1-900; FPL p 251
Responsiveness	2-301(a); FPL, p 239

Incentives -- General	3-407.1; ASPM#1, p 2-20; ICG, Ch I & X; CPA, Appendix A
Cost	ICG, Ch III
Schedule	ICG, Ch V
Performance	3-407.2
Award Fee	3-405.5; ICG, Ch IX; CPA
Multiple	ASPM#1, p 2-2; ICG, Ch IV; CPA
Lump Sum	See Variation in Quantity
Motivation	ICG, Ch X; CPA, Appendix A
Negotiation General	1-300.3; 18-300; FPL, Ch 8
Definition	1-300.3; 3-101; ASPM#1, p 2-24
General Policy	1-300.3; 3-500; 3-800; ECI 3-102
Discussions	3-507.1; 3-805.3; CCNG Ch 8
Preparations	ICG, Ch 2; CCNG, Ch 9
Authorization	18-301; Appendix J; AR 415-1; ER 1180-1-7; ECI 3-102(e)
Contract Forms	16-402
Factors for Award	3-101; 3-501, Sec D; 3-803(c); FPL, p 299
Special Requirements	1-404; 1-2000; 18-114
Performance Incentives	See Incentives
Price-Pricing	See Cost/Pricing
Procurement Strategy	1-2100; 18-102
Purchase Description (Performance Spec)	1-1206.1
Range of Cost/Price	ASPM#1, p 2-24; ICG, p 35; See also Cost/Pricing & Target Cost/Price

Range of Incentive Effectiveness	ICG, p 31; CPA, Ch 2
Research and Development	3-402(6)(b); 4-100
Responsibility	See Formal Advertising
Responsiveness	See Formal Advertising
Risk--General	3-401(a)(1); 3-308.5(c); 3-1000; ASPM#1, p 2-20,21,22; CCNG, Ch 11; FPL, p 493
Schedule Incentives	See Incentives
Share Lines (Sharing Risk)	ASPM#1, p 2-24; ICG, p 87-102;
Sole Source	3-101-d; ECI 3-102(e)(2); See also Competition
Target Cost/Price	ASPM#1, p 1-4; ICG, p 71,73
Target Profit/Fee	ICG, p 71-105
Two-Step Formal Advertising	2-500; ER 1180-1-7 See also Formal Advertising
Unit Prices	See Variation in Quantity
Variation in Quantity	7-503.27; ECI 7-672.9; CCNG 11-10; 7-671.7 (subdivided items)

CERL DISTRIBUTION

Chief of Engineers

Attn: DAEN-MPC-E/Frank Parker (5)

Attn: DAEN-ASI-L(2)

Attn: DAEN-RDL

All Divisions

Attn: Division Engineer (5)

All Districts

Attn: District Engineer (5)

Defense Documentation Center (12)

Commander

Attn: ATEN-AD (3)

Ft. Monroe, VA 23651

HQ, 7th Army Training Command

ATTN: AETTG-DEH (5)

APO New York, NY 09114

US Army Engr Div, Europe

ATTN: Technical Library (3)

APO New York 09757

Naval Facilities Engr Command

ATTN: Code 04

Alexandria, VA 22332

LT Neil B. Hall, CEC, USNR (Code 100)

884-6466

U.S. Navy Public Works Center

Box 6, FPO San Francisco 96651

Benson, Lee B

Construction contract type selection procedures / by Lee B. Benson, Glenn E. Colwell.--Champaign, IL : Construction Engineering Research Laboratory ; Springfield, VA : available from NTIS, 1979.

74 p. ; 27 cm. (Technical report ; P-98)

1. Building-contracts and specifications. 2. U.S. Army-military construction operations-contracts and specifications. I. Colwell, Glenn E. II. Title. III. Series: U.S. Construction Engineering Research Laboratory. Technical report ; P-98.